

SYMPTOM DIAGNOSIS
REGIONAL AND GENERAL

BY

WILFRED M. BARTON, A.M., M.D., F.A.C.P.

Associate Professor of Medicine, University of California at Los Angeles
and the University of Southern California
Professor of Medicine, University of California at Los Angeles
and the University of Southern California
and the University of California at Los Angeles
and the University of Southern California

WALLACE M. TATER, A.B., M.D.

Professor of Medicine, University of California at Los Angeles
and the University of Southern California
and the University of California at Los Angeles
and the University of Southern California

SYMPTOM DIAGNOSIS



D. APPLETON AND COMPANY
NEW YORK LONDON

SYMPTOM DIAGNOSIS REGIONAL AND GENERAL

BY

WILLIAM M. BARTON, A.M., M.D., F.A.C.P.

CLINICAL PROFESSOR OF MEDICINE, HARVARD UNIVERSITY, BOSTON
CLINICAL PROFESSOR OF MEDICINE, UNIVERSITY OF CHICAGO, CHICAGO
CLINICAL PROFESSOR OF MEDICINE, UNIVERSITY OF CALIFORNIA, LOS ANGELES
CLINICAL PROFESSOR OF MEDICINE, UNIVERSITY OF MICHIGAN, ANN ARBOR
CLINICAL PROFESSOR OF MEDICINE, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA
CLINICAL PROFESSOR OF MEDICINE, UNIVERSITY OF WISCONSIN, MADISON

AND

WALLACE M. YATER, A.B., M.D.

ASSISTANT PROFESSOR OF MEDICINE, HARVARD UNIVERSITY, BOSTON
ASSISTANT PROFESSOR OF MEDICINE, UNIVERSITY OF CHICAGO, CHICAGO
ASSISTANT PROFESSOR OF MEDICINE, UNIVERSITY OF CALIFORNIA, LOS ANGELES
ASSISTANT PROFESSOR OF MEDICINE, UNIVERSITY OF MICHIGAN, ANN ARBOR
ASSISTANT PROFESSOR OF MEDICINE, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA
ASSISTANT PROFESSOR OF MEDICINE, UNIVERSITY OF WISCONSIN, MADISON

COPYRIGHT, 1927, BY

D. APPLETON AND COMPANY



D. APPLETON AND COMPANY
NEW YORK
LONDON

Printed in the United States of America

1927

GEORGIO · MARTINO · KOBER
VNIVERSITATIS · GEORGIOPOLITANAE
SCHOLAE · MEDICINAE
NESTOREO · DECANO
HASCE · LVCVBRATIONES
AVCTORES · AMBO
PIETATIS · MEMORES
DEDICANT

PREFACE

The purpose of this work is threefold: (1) to aid the busy physician in the diagnosis of his case by allowing him to quickly reduce the number of possibilities to a small list; (2) to prevent the oversight of important considerations; (3) to make the medical man more observant of the characteristics of the symptoms of disease.

The book is not designed for study, but for quick reference while the patient is being prepared for examination or while he is dressing after the examination. It is not for the library but for the desk and ward, always at hand for ready information.

Patients come to or send for the physician because of certain symptoms which they have; and in the course of the examination information is elicited in the form of physical signs. A symptom is usually not found in one disease alone but in several or many, and often it is the combination or grouping of the symptoms in a given case which leads to the diagnosis; and yet there is usually one symptom which is outstanding, or of which the patient complains most particularly (the "chief complaint"), whose significance the physician may have forgotten. As the symptom is presented to or discovered by the doctor, some of the diseases in which it occurs may present themselves to his mind, but often in going over the field in his textbooks he will find that his memory is defective and that he has perhaps forgotten or never known many of the causes of that symptom. The same symptom often has special characteristics in the different diseases in which it occurs, and associations which make it distinctive.

The authors have endeavored to present symptoms in the most practical way for the making of a diagnosis. First of all, the symptoms and signs are grouped as regional or general; many symptoms are referred to a particular portion of the anatomy, others cannot be said to belong to any region and are designated, therefore, as general symptoms. The symptoms herein treated cover those of practically all medical and surgical conditions. Each symptom dealt with is complete as far as space and practicality will admit. Each article is really a thesis of the symptom, although theoretical and pathological comments are rarely made. The caption note presents a general consideration of the symptom and enumerates those causes of the symptom which cannot be given the name of a disease. Then follows those diseases in the order of importance in which the symptom is a prominent or constant finding. The characteristic of the symptom as it occurs in each disease is given, followed by a list of the chief signs and symptoms of that disease or a reference to a page on which they may be found. At the end is given a list of the less common causes of the symptom, so that the article is complete for each symptom considered.

As an example of how the book may be of service: A patient enters the doctor's office with a drooping eyelid. Such a condition calls for a careful history and

examination, as it may be due to many causes. After the history has been taken and while the patient is in the dressing room preparing for the examination the physician takes up the book and looks under "The Eyelids," where he will find ptosis considered. Here he can quickly read a complete list of the causes of ptosis, together with a description of the ptosis in each case and a synopsis of the chief symptoms of the disease, given in the order of frequency as concerns the ptosis. The list is concluded under "Less Common Causes," which enumerates the unimportant or unusual causes of the symptom. When the physician now examines the patient he will have a clear idea of the causes and kinds of ptosis and will be enabled more easily to make the diagnosis, without overlooking any condition in which that symptom occurs.

Laboratory findings are not considered, as this volume is designed as the physician's first aid to diagnosis. Where laboratory tests are indicated, however, in the symptomatology, they are given.

The information given in this work has been gleaned from the best authorities in all branches of medicine and surgery. A great many works, general and special, have been consulted, and in many instances descriptions have been copied bodily because of their classical nature. A bibliography would be exceedingly lengthy and of little value. There is nothing original in the material itself, except, perhaps, its arrangement. Practicability is the object of the book; conciseness, completeness, arrangement, and authenticity, its main features.

The authors have taken the stand that "hysteria," "neurasthenia," and "psychasthenia" are not entities but merely symptom complexes and have, therefore, considered them as phases of neurosis or as symptoms of organic diseases. These old-fashioned terms are always given with quotation marks or are designated as "neurosis."

The authors wish to express their gratitude to all those who have aided or encouraged them in their work, particularly Doctors John M. Ladd, William P. Argy, Augustus Kirchner and Otto Wendt, and to thank Richard M. Rosenberg for his faithful work in helping to prepare the manuscript for publication.

WILFRED M. BARTON
WALLACE M. YATER

CONTENTS

REGIONAL SYMPTOMS

	PAGE
THE HEAD	3
THE FACE (AS A WHOLE)	29
THE EYE	60
THE EAR	137
THE NOSE	154
THE LIPS	176
THE MOUTH OR BUCCAL CAVITY	181
THE TONGUE	207
THE TEETH	225
THE JAW	231
THE PHARYNX OR THROAT	237
THE LARYNX	259
THE NECK	269
THE UPPER EXTREMITY	293
THE THORAX OR CHEST	355
THE ABDOMEN	461
THE BACK AND SPINE	539
THE MALE GENITALIA	554
THE FEMALE GENITALIA	569
THE ANOPERINEAL REGION	590
THE LOWER EXTREMITY	600
GENERAL SYMPTOMS	653
INDEX	839

REGIONAL SYMPTOMS

REGIONAL SYMPTOMS

THE HEAD

SYMPTOMS	PAGE
Headache, Frontal	4
Headache, Lateral	6
Headache, Occipital	7
Headache, Vertex	8
Headache, General or Variable	9
Localized Tenderness of the Scalp	12
Abnormal Size and Shape of the Head	13
Delayed Closure or Enlarged Fontanels	15
Bulging Fontanels	16
Sunken Fontanels	16
Premature Closure of the Sutures	17
Delayed Closure of the Sutures	17
Swellings on the Head	17
Rolling of the Head (The head cannot be supported.)	20
Spasmodic Movements of the Head	21
Tremor or Shaking of the Head	22
Forward Displacement of the Head	23
Head Turned to One Side	23
Retraction of the Head	24
Enlarged Veins of the Head	25
Baldness or Thin Hair	25
Bald Patches on the Scalp	26
Skin Affections of the Scalp	27
Skin Affections of the Eyebrows	29

HEADACHE

(*Cephalalgia; Cephalea*)

Headache is a common complaint. The characteristics of the headache may sometimes give a clue to the diagnosis, but too much importance must not be given to this one symptom alone. Seven points at least should be determined in a history of this complaint: (1) location, radiation, and depth, (2) duration, (3) frequency, (4) character, (5) intensity, (6) progress, and (7) associated symptoms and relation to other functions.

Cephalalgia may be local or general, and may arise from conditions that are intracranial, pericranial, or extracranial. Many headaches occur independently of the existence of any specific disease, others occur as a constant symptom of particular diseases. Headache is often the first evidence of fever from any cause, and is especially notable in the acute infectious diseases. Weakness from any cause, mental overwork (exhaustion), emotional strain (anger, worry, excitement), defective ventilation, excess of tea, coffee, tobacco, exposure to heat and cold, insufficient or interrupted sleep, or improper hygiene of any kind may produce headaches. The following diseases are those in which this complaint is a characteristic or prominent symptom. While the division of headaches on a basis of their localization may not be entirely satisfactory on account of overlapping, it is true, nevertheless, that the headaches in many conditions often present definite sites of predilection. It must also be remembered that combinations of several forms of headache due to the coexistence of their causes in the same patient may occur.

HEADACHE, FRONTAL

Simple Catarrhal Frontal Sinusitis.—*Characteristics.*—The pain is usually limited to the glabella or supra-orbital region, but may affect the whole frontal region on one or both sides. There is a marked periodicity of the pain, usually from 10 A.M. to 2 or 4 P.M., when it suddenly ceases. The pain may be exaggerated by stooping.

Chief Signs.—Tenderness beneath the eyebrow (Ewing's point) or over the sinus; discharge from the nose; opacity of the sinus by transillumination and x-ray.

Empyema of the Frontal Sinus.—*Characteristics.*—Pain is the predominating symptom, and even in the chronic cases it is present. It varies in intensity from the severe, radiating, lancinating type to that of the dull, pressurelike sensation known as "brow-ache." It is located chiefly in the supra-orbital region, the root of the nose, the forehead, and top of the head, and is limited to one side. It is often of a neuralgic character, and is usually worse upon arising in the morning. As the day advances it gradually disappears and the patient is comparatively free from pain the latter part of the day and during the night.

Chief Signs.—History of previous nasal trauma or disease, or some specific infectious disease; tenderness on pressure or percussion, especially upon the orbital plate; increased nasal secretion, purulent or mucopurulent; aprosexia; anosmia; rhinoscopy (pus exuding from the space between the middle turbinate and the outer nasal wall); transillumination; x-ray.

Eye-Strain (*Errors of Refraction*).—*Characteristics.*—Various writers give eye-strain as the cause of headache in 4 to 90 per cent of cases of headache. While headaches due to eye-strain often show wide variation from the typical location and time of occurrence, those due to hyperopic astigmatism are most frequently superciliary, frontal, and temporal. They are usually aggravated or brought on by use of the eyes. Any error of refraction causing strain of the intrinsic muscles of the eyes may cause frontal headache or deep orbital pain (ametropia, low hypermetropia, low myopia, hypermetropic astigmatism, hypermetropia, myopic astigmatism, mixed astigmatism, myopia, etc.). The headaches come on often

about noon after several hours' work, but, on the other hand, the patient may awake with the pain in the morning.

Chief Signs.—Fatigue after using the eyes; blurred vision; may be blepharitis; discomfort or tenderness of the eyeballs; ocular examination; relief after rest or correction of the error.

Deviations or Deflections of the Nasal Septum.—*Characteristics.*—Frontal headache is frequently present in high deviations, and is most severe in the morning on awakening.

Chief Signs.—See page 162.

Acute Rhinitis (Coryza).—*Characteristics.*—There is a sensation of fullness and pain about the nose and forehead.

Chief Signs.—Sneezing; nasal discharge; may be malaise and fever; may be mental hebetude (aproxexia nasalis).

Constipation.—*Characteristics.*—The pain is usually of a throbbing, pulsating character, localized in the frontal and orbital regions, and is made worse by sudden movements of the head.

Chief Signs.—Furred tongue; general malaise and debility; history of intestinal stasis.

Anemia.—*Characteristics.*—The headache is usually frontal, but it may be in the vertex, general, temporal, or occipital regions. It is usually dull and heavy, a sensation of weight or gnawing, though it may undergo neuralgic exacerbations and may radiate to the temples or over the entire head.

Chief Signs.—Fatigue; anorexia; palpitation; edema of the feet; pallor; faintness; blood examination (low hemoglobin and red cell count, moderate anisocytosis and poikilocytosis); discovery of basic disease causing the anemia.

Iritis.—*Characteristics.*—The pain is in or about the eye and temple and is severe, becoming worse particularly at night.

Chief Signs.—Contracted pupil; pericorneal injection; dulness of the iris.

Ethmoiditis.—*Characteristics.*—There is usually a dull pain between the eyes with a feeling of weight in the vertex. Pressure over the inner canthus causes tenderness.

Chief Signs.—Discharge of creamy tenacious mucus from the nose; may be asthenopia or eye disturbances; may be nasal asthma and cough; swelling of the middle turbinate; x-ray of the sinuses.

Trigeminal Neuralgia (Trifacial Neuralgia; Tic Douloureux).—*Characteristics.*—Paroxysmal neuralgic, unilateral pains occur along the course of one or more branches of the trigeminal nerve. When the ophthalmic branch alone is affected, which is not frequently the case, the pain will be in the supra-orbital region. The pain begins and ends suddenly with complete relief between attacks. Attacks are more frequent during the day. The patient indicates the site of the pain cautiously with only one or two fingers. The pain is agonizing.

Chief Signs.—Tenderness over the points of exit of the nerves from the bones (supra-orbital in this case); hyperesthesia along the course of the nerve.

Supra-orbital Neuralgia ("Brow Ague").—*Characteristics.*—The pain is similar to that of trigeminal neuralgia but limited to the frontal branch. It is usually secondary to disease of the frontal sinus or orbit, herpes, or syphilis of the nervous system.

Glaucoma.—*Characteristics.*—The pain is usually severe, paroxysmal or constant, especially in the acute form. It is referred to the brow, cheek, temple, or side of the nose along the branches of the fifth cranial nerve.

Chief Signs.—Increased intra-ocular tension (tonometer or finger); colored rings around distant lights; shallowness of the anterior chamber; dilatation of the pupil; cupped disk; tortuous veins; arterial pulsations of the retinal vessels.

Idiosyncrasy to Iodids and Chronic Iodic Intoxication.—*Characteristics.*—The pain is dull and is located over the frontal sinuses.

Chief Signs.—History of ingestion of the drug; coryza; sore-throat; ptialism; eruptions of the skin, usually acne, but may assume any form.

Acromegaly.—*Characteristics.*—Headache is common, usually frontal. Sometimes it is diffuse and persistent or even uncontrollable. It is usually accompanied by marked somnolence.

Chief Signs.—Gradual enlargement of the bones of the face, hands and feet with thickening of the soft tissues; bitemporal hemianopsia; may be optic atrophy with increasing blindness; polyuria, glycosuria; x-ray of the sella turcica.

Less Common Causes.—Adenoids; typhoid fever; gastritis; hematoma of the dura mater; lithemia; "neurasthenia"; malaria; periostitis; syphilitic nodes; thrombosis of the superior longitudinal sinus; trench fever; uremia; secondary hydrocephalus (bilateral frontal headache); maxillary sinusitis.

HEADACHE, LATERAL

Migraine (*Periodic Sick-Headache; Bilious Headache; Megrim; Hemicrania*). *Characteristics.*—Headache really constitutes the disease. It is cumulative and expansile in character, beginning in a small localized spot, which is generally constant either on the temple or forehead or in the eyeball. It is of a penetrating, sharp, boring character. The pain gradually spreads and involves the entire side of the head, sometimes the neck, and may pass into the arm. In some cases both sides are affected.

Chief Signs.—Hereditary diathesis; history of first appearance in childhood, recurring perhaps through life up to the beginning of old age; nausea and vomiting; paroxysms of fixed duration, two to twenty-four hours; visual disturbances (flashes of light, spectra, dimness of vision or hemianopsia); prostration.

Trigeminal Neuralgia.—*Characteristics.*—The pain is sometimes so severe as to include the whole side of the head. See above.

Dental Caries (*Toothache*).—*Characteristics.*—The pain is severest in the maxillary or mandibular regions, but may radiate to the entire side of the head along the course of the fifth cranial nerve.

Chief Signs.—Local signs of caries; tenderness on percussion; x-ray.

Acute Mastoiditis.—*Characteristics.*—The first symptom is intense pain, involving the mastoid and often the whole side of the head. It may even extend over to the opposite side of the head.

Chief Signs.—Local tenderness; edema of the mastoid; congestion of the meatus with bulging of the posterior wall of the canal (otoscopy).

Otitis Media.—*Characteristics.*—Generally there is intense pain in the ear and side of the head. The pain may be shooting and increased by movement of the

jaw, pressure over the tragus, or pulling of the auricle outward. If perforation does not soon occur with evacuation of pus, the pains radiate and become throbbing and pulsating.

Chief Signs.—Fever; deafness; tinnitus; bulging of the drum (otoscopy).

Less Common Causes.—Ceruminosis of the external auditory canal; maxillary antritis (inflammation of the antrum of Highmore); adenoids; cranial caries; cancer of the tongue; cancer of the neck; dysmenorrhea; unilateral eye-strain; “hysteria”; gout; chronic nephritis; nasal polyp; cerebral tumor; “neurasthenia.”

HEADACHE, OCCIPITAL

Neurosis (“Neurasthenia”).—*Characteristics.*—Cases occur in which headache of a persistent character is the outstanding symptom. This is really more of a sense of pressure within the head. While it is probably most often occipital, it may be diffuse, vertical, temporal, frontal or parietal. The pain is dull or merely a sensation of fatigue, and is aggravated by mental or physical effort.

Chief Signs.—Suggestibility; easy fatigue; insomnia; backache.

Chronic Parenchymatous Nephritis.—*Characteristics.*—The headache is frequently severe, often occipital, extending to the neck. It may, however, be vaguely frontal, general, or even unilateral. Increase in the pain is a warning of impending uremia. The headache may be associated with giddiness, tinnitus, and a tendency to epistaxis.

Chief Signs.—Edema (beginning in the face); nausea and vomiting; increased arterial tension with accentuation of the second aortic sound; diminution of the output of urine; albuminuria; cylindruria; hematuria; albuminuric retinitis (ophthalmoscopy); lowered kidney function (phenolphthalein test); high blood urea (blood chemistry).

Utero-ovarian Disorders (*Displacements, Tumors, Inflammations*).—*Characteristics.*—The headache is usually occipital, sharp, and radiating, and is accentuated during the menstrual period. It may be relieved by pressure.

Chief Signs.—Backache (low); leukorrhea; disturbed menstrual function; evidence of pelvic disorder by bimanual examination.

Adenoids.—*Characteristics.*—Dull ache in the occipital region is a common symptom.

Chief Signs.—Nasal catarrh; mouth-breathing; disturbed sleep; deafness; chest deformities (Harrison’s groove); backward development; examination of the nasopharynx (finger or the nasopharyngoscope).

Cervico-occipital Neuralgia.—*Characteristics.*—The pain is paroxysmal, unilaterally occipital, sharp, and sometimes intense.

Chief Signs.—Tender points over the course of the posterior branches of the cervical nerves (Valleix’s points).

Sphenoidal Sinusitis.—*Characteristics.*—Severe pain is common and may be the only symptom of the disease. It is usually occipital or deep in the center of the head. It may, however, occur in the temples, the postauricular region, and the middle ear, with a feeling of weight and pressure in the vertex.

Chief Signs.—Purulent discharge from the nose; detection of the source by the nasopharyngoscope; opacity of the sinus (x-ray).

Uremia.—*Characteristics.*—Headache is an important symptom. It is most often occipital and extends to the neck. It may be an early symptom, is severe and continuous over a long period. Giddiness may accompany the headache.

Chief Signs.—History of renal disease; mental dullness and apathy; twitching of the muscles of the face and hands; paroxysmal dyspnea; vomiting; oliguria, albuminuria, cylindruria, hematuria; high blood urea (blood chemistry); albuminuric retinitis (ophthalmoscopy).

Cerebrospinal Meningitis.—*Characteristics.*—Headache is one of the premonitory symptoms and occurs also at the onset. It is chiefly in the back of the head and extends into the neck and back. The headache increases and there is painful stiffness of the neck and a sensitiveness to noises.

Chief Signs.—Acute onset; high fever; delirium; vomiting; convulsions; retraction of the head and neck; Kernig's and Brudzinski's signs positive; lumbar puncture (cloudiness, pleocytosis, presence of meningococci).

Cerebellar Tumor.—*Characteristics.*—The pain is extreme, lancinating or boring, and may be located in the occiput, forehead, or in the whole head, and shows marked exacerbations. It is a constant and early symptom.

Chief Signs.—Vomiting; vertigo; optic neuritis; reeling and lurching gait with a tendency to fall to the side of the lesion (asynergia); dysmetria; dysdiadochokinesis; may be tilting of the head to the side of the lesion; may be nystagmus; progressive course.

Indurative, Rheumatic, or Nodular Headache.—*Characteristics.*—The pain, which is superficial in location, is dull and aching, and is aggravated by cold drafts and by prolonged tension on the muscles overlying the skull. The headaches are usually relieved by heat and massage.

Chief Signs.—Onset in later life; painful indurations and tender points near the attachment of the muscles to the occiput; may be rheumatic pains elsewhere.

Eye-Strain (Muscle Imbalance).—*Characteristics.*—The headache due to muscular errors, as opposed to refractive errors, is commonly occipital.

Chief Signs.—See page 72.

Less Common Causes.—Chronic interstitial nephritis; cervical Pott's disease; utero-ovarian disorders (displacements, tumors, inflammations); hypotension; diabetes; epilepsy; tabes dorsalis; syringomyelia; basal tongue lesions; trench fever; Buhl's disease.

HEADACHE, VERTEX

Neurosis ("Hysteria").—*Characteristics.*—The pain is a feeling of pressure or numbness at the vertex, or of compression or constriction over the lateral regions ("en casque"). Sometimes there is a sensation like that of a nail driven into the head (clavus hystericus).

Chief Signs.—Occurrence in females; morbid motor, sensory, and psychic phenomena, such as paralysis without wasting of the muscles, characteristic convulsive seizures, anesthesia or hyperesthesia, special sense palsies, suggestibility, and emotionalism.

Neurosis ("Neurasthenia," Helmet Headache).—See above.

Less Common Causes.—Utero-ovarian disorders (displacements, tumors, inflammations); anemia; constipation; epilepsy; sphenoidal sinusitis.

HEADACHE, GENERAL OR VARIABLE

Arterial Hypertension (*Essential Hypertension*).—*Characteristics*.—The headaches of hypertension are rather characteristic in that they tend to appear early in the morning and usually wear off after the patient gets up. They are, as a rule, bilateral, occipital, or frontal, and tend to occur almost daily in contradistinction to most types of headache. They may occur on change of posture but they often do wake the patient from sleep.

Chief Signs.—Demonstration of an abnormally high blood-pressure by the sphygmomanometer (over 160 mm. of Hg., usually much higher); occurrence in persons usually over fifty, leading strenuous lives, and who are otherwise healthy; ruddy complexion and plethoric habitus; absence of evidences of arterial, cardiac, or renal changes until late; eye-grounds normal or arteries contracted, tortuous, and thickened.

Arteriosclerosis.—*Characteristics*.—The headache is often diffuse, more or less continuous, not severe, the sensation being of pressure rather than of pain. It is particularly common in cases with cerebral arteriosclerosis.

Chief Signs.—Occurrence usually after middle age; thickened arteries; high blood-pressure; left ventricular hypertrophy with accentuation of the second aortic sound; vertigo; may be confusion or lack of attention; later may be progressive dementia; transient paralysis and aphasia, or cerebral hemorrhage; sclerosis of the retinal vessels (ophthalmoscopy).

Cerebral Syphilis (*Cerebrospinal Syphilis*).—*Characteristics*.—The headache is usually very disagreeable and of a migratory nature. It is usually dull, at times boring. It is inconstant, intermittent, and often worse at night. It may disappear for weeks or months and then suddenly reappear. It may also be the only sign of cerebral syphilis for months or even years. The location is often frontal or parietal.

Chief Signs.—History of syphilis (two to five years before); mental symptoms (from fretfulness to dementia); insomnia; attacks of somnolence; vertigo; cranial nerve palsies (especially second, third, and sixth); may be epileptiform attacks, transient aphasia or paralysis; positive Wassermann; spinal fluid (positive Wassermann, lymphocytosis, increased globulin, colloidal gold reaction with luetic curve).

Acute Alcoholism.—*Characteristics*.—The headache follows a debauch and is known as "Katzenjammer." It may be neuralgic in character.

Chief Signs.—History of overindulgence in alcohol.

Acute Gastritis.—*Characteristics*.—The pain may be severe and accompanied by vertigo (vertigo e stomacho læso). It may be restricted to the front of the head or it may be general.

Chief Signs.—Uncomfortable feeling in the abdomen; depression; nausea; eructations; vomiting; furred tongue; possibly fever.

Chronic Gastritis.—*Characteristics*.—Headache is common, though it may be more a sense of pressure than pain and may be accompanied by vertigo.

Chief Signs.—General debility; oppression after eating; coated tongue with red margins; bad taste in the mouth; nausea in the morning; eructations; occasional vomiting of slimy mucus; impaired digestion; gastric analysis (subacidity).

Nasal Obstruction (*Polypi; Spurs; Septal Deviations; Turbinate Thickening; Bony Ridges; Chronic Rhinitis*).—*Characteristics*.—The headache is usually similar to that of the neurasthenic, a sense of pressure, though it may take any form.

Chief Signs.—Nasal discharge; disturbance of the sense of smell; neurasthenic symptoms; rhinoscopy, revealing the cause of the obstruction.

Cerebral Thrombosis.—*Characteristics*.—Pain is frequently a prodromal symptom, together with vertigo and transient aphasia.

Chief Signs.—Onset rather gradual as compared with hemorrhage or embolism; incomplete or slow loss of consciousness; gradually developing hemiplegia.

Tuberculous Meningitis.—*Characteristics*.—The pain may be intense and agonizing. The child puts its hand to its head and occasionally, when the pain becomes worse, gives a short sudden cry, the so-called hydrocephalic cry.

Chief Signs.—Insidious onset; change of disposition; irregular pulse and fever; signs of meningeal irritation; palsies; coma; discovery of a tuberculous focus; spinal fluid examination (clarity, lymphocytosis, tubercle bacilli, increased pressure).

Fracture of the Skull.—*Characteristics*.—Headache occurs during the stage of irritation.

Chief Signs.—History of injury; signs of cerebral irritation, developing into those of compression; possibly blood in the spinal fluid (spinal puncture); x-ray.

Cerebral Concussion.—*Characteristics*.—Headache may follow head injury and is often continuous and persistent.

Chief Signs.—History of injury; vomiting; varying degree of consciousness or complete unconsciousness; signs of cerebral irritation.

Cerebral Tumor.—*Characteristics*.—Headache as a rule is a severe and prominent symptom, though it may be quite absent. It is at first mild, early becoming severe and persistent, though periods of remission may occur. It is most characteristic when it occurs early in the morning, often at three or four o'clock, and wakes the patient from sleep. Later it is increased by those causes which produce cerebral hyperemia (excitement, exertion). It may be localized or diffuse, and there may be local tenderness on percussion. The site of a headache is a very uncertain guide for localization purposes, however.

Chief Signs.—Vomiting, often early and constant (especially in cerebellar and pontine growths), not related to food, unaccompanied by nausea, and may be projectile; optic neuritis (choked disk), usually bilateral; vertigo; may be mental or emotional changes; may be convulsions; slow pulse; localizing symptoms; x-ray.

Cerebral Abscess.—*Characteristics*.—Headache in brain abscess comes on typically as one symptom in a sudden and stormy onset, often with rigidity of the neck. A period of relative quiescence and apparent improvement follows, corresponding to the stage of recovery from the diffuse initial onslaught. Usually after several weeks there is a relapse from extension of the trouble.

Chief Signs.—History of antecedent infection, frequently of the ear; stormy onset; restlessness; chills, fever, leukocytosis, sweats; delirium; convulsions; spinal puncture at the onset (evidences of meningitis); x-ray.

Encephalitis Lethargica (*Epidemic Encephalitis*).—*Characteristics*.—Headache is often among the initial symptoms. The headache may be accompanied by generalized pain and aching. It disappears with the onset of stupor.

Chief Signs.—Sudden onset with slight nasal discharge, fever, and sweating,

followed in a day or two by restlessness, anorexia, constipation, often vomiting, possibly nocturnal delirium, subsiding in three to fourteen days, followed by abnormal drowsiness; drowsiness, passing in a week into lethargy or stupor; appearance of ptosis or other cranial nerve palsies; diplopia; may be meningeal symptoms; muscular hypertonia or rigidity; coarse tremor; choreo-athetoid movements; emotionalism; whispering monotonous speech or dysarthria; may be paralysis; psychic manifestations; moderate leukocytosis (9,000 or higher); spinal fluid normal or slightly altered.

Sunstroke (*Insolation; Thermic Fever*).—*Characteristics*.—The more usual form comes on during exposure, with pain in the head, dizziness, a feeling of oppression, and sometimes nausea and vomiting.

Chief Signs.—History of exposure to the sun's rays or high external temperature; hyperpyrexia; unconsciousness; hot, dry, red skin; rapid, full pulse; stertorous respiration; dilated pupils which later become contracted.

Abscess of the Scalp (*1. Subcutaneous; 2. Subaponeurotic; 3. Subpericranial*).—*Characteristics*.—There is local pain and tenderness.

Chief Signs.—Those of local inflammation: local swelling, heat, redness, and fluctuation.

Cranial Caries (*Necrosis; Periostitis; Osteitis; Osteomyelitis*).—*Characteristics*.—The pain is localized and often worse at night.

Chief Signs.—Those of local inflammation; frequently a history or signs of either tuberculosis or syphilis; x-ray.

Aortic Regurgitation.—*Characteristics*.—Headache, often throbbing, with dizziness, flashes of light, and a feeling of faintness on rising quickly may be among the earliest symptoms.

Chief Signs.—History of syphilis; precordial pulsation; forcible apex beat; increased cardiac dullness; diastolic murmur at the base conducted down the sternum; visible arterial pulsation; Corrigan pulse; capillary pulse; high systolic, low diastolic pressure; positive Wassermann.

Hay-Fever.—*Characteristics*.—There may be considerable headache and distress.

Chief Signs.—Seasonal occurrence (usually during pollination); fits of sneezing; conjunctival irritation and lacrimation; watery, copious, and continuous nasal discharge; general depression; may be cough; determination of sensitization by skin tests.

Less Common Causes.—Cardiac decompensation; myocarditis; cardiac hypertrophy; endocarditis; nephritis; uremia; anemia; lumbar puncture (pains on arising); high cervical cord tumor; mediastinal tumor (passive congestion); polycythemia; focal infections; heat exhaustion; secondary syphilis; acute poliomyelitis; psychosis (particularly those associated with depression); general paresis; cerebral hemorrhage (may be a prodromal symptom); cerebral embolism (may be a premonitory symptom); epilepsy (may be part of the auræ or sequelæ); pachymeningitis hæmorrhagica (associated with injury, alcoholism, or insanity); acute cerebral leptomeningitis; hydrocephalus, acquired (acute or chronic); multiple sclerosis; encephalitis; thrombosis of the superior longitudinal sinus; oxycephalus; cinchonism (sense of fullness); carbon monoxid poisoning; lead poisoning (saturnism); arsenic poisoning; chronic pulmonary tuberculosis; nervous dyspepsia, enter-

optosis, hyperacidity (all causing neurasthenic types of headache); jaundice; gout; helminthiasis (headache resembling that of anemia); chronic cholecystitis; cirrhosis of the liver; thoracic aneurysm (passive congestion); cervical adenitis; thrombosis of the veins of the neck; acute yellow atrophy of the liver; pellagra; Ménière's disease; leontiasis ossium; miners' nystagmus; hypopituitarism; Addison's disease; diabetes (preceding coma); exophthalmic goiter; prolonged lactation; oxaluria.

LOCALIZED TENDERNESS OF THE SCALP

(See also "Swellings on the Head," page 17.)

Trauma and inflammation are naturally the commonest causes of scalp tenderness, in which case the etiological and visible evidence make diagnosis relatively easy.

Neurosis ("Hysteria").—*Characteristics.*—Tenderness on pressure in different localities is a characteristic feature in "hysteria," and is to be distinguished from hyperesthesia, which also may exist to very light touch. The tender areas are usually limited in extent. Sometimes they are found upon the head, but they are more common in other regions (inguinal, inframammary, epigastric, and spinal).

Chief Signs.—See page 8.

Cerebral Syphilis.—*Characteristics.*—Local tenderness on pressure may accompany the headache.

Chief Signs.—See page 9.

Mastoiditis.—*Characteristics.*—In acute cases, accompanying the first symptom, which is intense pain involving the mastoid and often the whole side of the head, there is tenderness on pressure over the mastoid.

Chief Signs.—See page 138.

Cervico-occipital Neuralgia.—*Characteristics.*—The tender point found most frequently is the occipital point between the tip of the mastoid and the first cervical vertebra. Dull pain on pressure is usual as a paroxysmal occurrence. This tends to make the sufferer hold his head in a stiff position. The tenderness may be so acute that ruffling of the hair will start a paroxysm.

Chief Signs.—See page 7.

Lateral Sinus Thrombosis.—*Characteristics.*—There is tenderness, pain, and edema along the course of the sinus, from the base of the mastoid to the occipital protuberance. The mastoid and the jugular vein, if involved, are usually tender.

Chief Signs.—History of suppurative middle-ear disease; cessation of offensive discharge from the ear; chills, fever, sweats, leukocytosis; may be paralysis of the vagus, glossopharyngeal, or spinal accessory nerves from pressure on the jugular foramen.

Cerebral Tumor.—*Characteristics.*—Local tenderness on percussion may sometimes be elicited, but it is an uncertain guide to the situation of the tumor. The general drift for localized pain and tenderness is, however, in favor of a similarly located neoplasm.

Chief Signs.—See page 10.

Cerebral Abscess.—*Characteristics.*—During the stage of latency or remission when the headache diminishes, the fever abates, and the patient is fatigued, somnolent, and indifferent. Percussion may reveal local tenderness over the site of the abscess.

Chief Signs.—See page 10.

Less Common Causes.—"Neurasthenia"; hydrocephalus; Jacksonian epilepsy; meningitis; migraine; astigmatism; herpes; lupus erythematosus; scleroderma; acute seborrhea; von Recklinghausen's disease; otitis media; rickets; gumma.

ABNORMAL SIZE AND SHAPE OF THE HEAD

The normal circumference of the head at birth is about fourteen inches, and at the end of one year, about eighteen inches.

Chronic Internal Hydrocephalus.—*Characteristics.*—The head is large and spherical, the fontanels and sutures wide, and the face small.

Chief Signs.—History of gradual enlargement two or three months after birth; somnolence, lethargy; sharp cries (the hydrocephalic cry); headache; spasticities; contracted and sluggish pupils; impaired hearing; visible scalp veins; difficulty in raising the eyelids; less marked symptoms if the enlargement is gradual.

Rickets (Rachitis).—*Characteristics.*—The head appears quadrilateral in profile; the forehead is high, square, and prominent. The cranium viewed from above is elongated, large, and square, and the vertex flattened. The anterior fontanel may be open until the third or fourth year, and there are areas of softness in the skull due to imperfect ossification.

Chief Signs.—Insidious development beginning about the period of dentition; nocturnal restlessness; head sweating; constipation; enlarged abdomen; painful joints, epiphyseal enlargements; rachitic rosary, pigeon-breast with Harrison's groove in the lower chest; spinal deformity; late walking; catarrhal conditions; tendency to tetanic convulsions; phosphaturia.

Congenital Syphilis (Hereditary Syphilis).—*Characteristics.*—The sutures are depressed and surrounded by bosses termed Parrot's nodes, the bossing chiefly affecting the frontal prominences of the skull. The head assumes shapes to which the terms, "hour-glass" or "hot cross bun" have been applied. Soft areas may occur (craniotabes).

Chief Signs.—Old appearance; snuffles in three to eight weeks; skin affections (roseola, desquamating palms, ulceration of the corners of the mouth called rhagades) appearing in three to twelve weeks; bone affections (epiphysitis); positive Wassermann. At second dentition or at puberty: keratitis; iritis; choroiditis; thickening of the long bones, especially the tibia; Hutchinson's teeth.

Cretinism.—*Characteristics.*—The head is large and flat-topped, the anterior fontanel open, even as late as the tenth year, and the face broad and flat with a wide and Negroid type of nose. The forehead is low, the eyes far apart, and the mouth open with the tongue protruding.

Chief Signs.—Characteristics not noticeable until the sixth or seventh month; prognathic face; large tongue; short body; flat chest; pot belly; scanty hair; lack of sexual development; slow metabolism; mental defects; thyroid gland not palpable; delayed dentition.

Achondroplasia (Chondrodystrophy).—*Characteristics.*—The head has a large vault and there is depression of the nose and prognathism, so that the individual resembles a bulldog.

Chief Signs.—Congenital nature; short arms and legs with body of normal length; short stature (micromyelia); trident hands; lumbar lordosis with prominent abdomen; sexual precocity.

Microcephalic Idiocy.—*Characteristics.*—The head is small, under seventeen inches in circumference, is triangular with a rapidly receding forehead and flat occiput, and the apex is at the crown.

Chief Signs.—Sutures closed frequently at birth; paresis; paralysis; convulsions; tics; atrophies; strabismus; deafness; mental deficiency.

Infantile Cerebral Paralysis (*Cerebral Diplegia and Hemiplegia*).—*Characteristics.*—The head is smaller than normal in all of its diameters (diplegia), or there may be asymmetry (hemiplegia).

Chief Signs.—History of difficult labor; muscular weakness dating from infancy; tendency to retraction of the head; rigidity of one or both lower extremities with increased knee-jerks; may be epileptiform attacks or choreiform movements; imperfect mental development; may be "scissors" gait.

Mongolism (*Mongolian Idiocy*).—*Characteristics.*—The head is brachycephalic, diminished in its anteroposterior diameter, flattened on the face and occiput, but without recession of the supra-occipital regions as in the microcephalic.

Chief Signs.—Characteristics noticeable from birth: palpebral fissures oblique, upward and outward; strabismus; mottled complexion; tongue large and coarsely papillated, frequently protruded and drawn back; thyroid gland palpable; deferred closure of the fontanel; retarded puberty; delayed dentition; large hands and feet with incurving little finger; mentality of four years.

Acromegaly.—*Characteristics.*—The bones of the face particularly are enlarged, especially the inferior maxillæ. The soft parts are also hypertrophied, the brows heavy, the tongue, nostrils, eyelids, and ears thickened and hypertrophied. The face is broadened and elongated, so that it is ovoid with the large end downward on account of the large maxillæ. The teeth are widely separated.

Chief Signs.—Onset between twenty and forty years of age; history of gradual enlargement of the feet, hands, face; thick, dry, loose, wrinkled skin; heavy growth of hair; enlarged tongue; difficulty of speech; cerebral symptoms (headache, dullness, optic neuritis); genital disturbance; glycosuria; x-ray of the sella turcica, showing enlargement.

Myxedema (*Hypothyroidism*).—*Characteristics.*—The head is large with a "full moon" face. The features are coarse, the nostrils and lips thick, and the skin rough and dry.

Chief Signs.—Occurrence in adult life; symptoms of lowered metabolism (mental and physical sluggishness); myxedematous swelling of the face and extremities; obesity; rheumatic pains; low basal metabolic rate; result of therapeutic test with thyroid medication.

Osteitis Deformans (*Paget's Disease*).—*Characteristics.*—The head is enlarged, usually symmetrically, and triangulated, the forehead being prominent and extremely broad, with the posterior part bulging less than the front and sides. There is no enlargement of the bones of the face. The thickened bones are usually smooth though there may be nodules.

Chief Signs.—Onset in middle life; bending and bulging of the long bones for-

ward, with gradual loss in height; stooping with round shoulders; head held forward with the chin raised; chest sunken toward the pelvis; abdomen pendulous; slow, awkward gait; may be pain; x-ray (fuzzy outline and thickening of the skull, changes in other bones, especially the long bones and the pelvis).

Oxycephaly (*Associated with Hydrocephalus: Turmschädel*).—*Characteristics*.—The head is forced into a conical shape from premature closure of the coronal and sagittal sutures.

Chief Signs.—Optic atrophy with impairment of vision and headache; loss of the sense of smell; exophthalmus; intelligence normal.

Scaphocephaly (*Associated with Hydrocephalus*).—*Characteristics*.—The head is narrow and elongated from before backward.

Chief Signs.—Optic atrophy with impairment of vision; loss of smell; sometimes exophthalmus; intelligence normal or only slightly impaired.

Progressive Facial Hemiatrophy.—*Characteristics*.—The face looks like two lateral halves of different individuals, with a defined vertical line of junction. The hair of the smaller side is thin or absent. The eyes are sunken.

Chief Signs.—Skin shiny and pigmented, with yellowish-brown patches; atrophy of the whole side of the face, especially of the bones; eyebrows and hair on one side gray or thin; half of the tongue and one ear wasted.

Leontiasis Ossium.—*Characteristics*.—The cranial and facial bones are hypertrophied, usually symmetrically, and with knobby excrescences, the process starting, as a rule, in the superior maxilla.

Chief Signs.—Onset at puberty; slow progress; violent headache; nasal obstruction; optic atrophy.

Flattening Due to Lying on the Back.—*Characteristics*.—The occiput is flattened due to lying on the back during the first year of life.

Less Common Causes.—Osteogenesis imperfecta (usually born dead); porencephalic idiocy (asymmetrical with flat forehead).

DELAYED CLOSURE OR ENLARGED FONTANELS

Normally the posterior fontanel closes about the second month, the anterior between the fourteenth and twenty-second months. The anterior fontanel should not exceed one inch in diameter at the end of one year.

Rickets (*Rachitis*).—*Characteristics*.—The anterior fontanel may be open until the third year.

Chief Signs.—See page 13.

Cretinism.—*Characteristics*.—The anterior fontanel may be open until the tenth year, or may be open even in adults.

Chief Signs.—See page 13.

Congenital Syphilis (*Hereditary Syphilis*).—*Characteristics*.—The anterior fontanel closes late.

Chief Signs.—See page 13.

Malnutrition.—*Characteristics*.—The anterior fontanel may be open until late in the second year.

Chief Signs.—History of tardy development; underweight; nervous manifestations; gastro-enteric disturbances.

Achondroplasia (*Chondrodystrophy*).—*Characteristics*.—The anterior fontanel may not close until the fourth or fifth year.

Chief Signs.—See page 13.

Chronic Primary Hydrocephalus.—*Characteristics*.—The anterior fontanel may never close.

Chief Signs.—See page 13.

Mongolism (*Mongolian Idiocy*).—*Characteristics*.—The anterior fontanel closes late.

Chief Signs.—See page 14.

Less Common Causes.—Osteogenesis imperfecta; infantile scurvy.

BULGING FONTANELS

The anterior fontanel bulges and pulsates with each beat of the heart in all cases of acute fevers occurring in infancy.

Chronic Primary Hydrocephalus.—*Characteristics*.—The anterior fontanel bulges.

Chief Signs.—See page 13.

Cerebrospinal Meningitis.—*Characteristics*.—The anterior fontanel is tense and bulging.

Chief Signs.—See page 8.

Tuberculous Meningitis.—*Characteristics*.—The anterior fontanel is tense and bulging.

Chief Signs.—See page 10.

Meningeal Hemorrhage in Infants.—*Characteristics*.—The anterior fontanel is bulging if the hemorrhage is large, and the sutures are separated.

Chief Signs.—History of difficult labor; feeble or irregular respiration; feeble, slow pulse; pupils at first contracted, then dilated; stupor; convulsions; increased reflexes; localized paralysis if the baby lives; lumbar puncture (bloody fluid).

Cerebral Tumor in Infancy.—*Characteristics*.—The anterior fontanel may bulge.

Chief Signs.—Headache; vomiting; choked disk; fretfulness; general convulsions; paralysis; x-ray.

Less Common Causes.—Oxycephaly; spina bifida (on pressing the swelling).

SUNKEN FONTANELS

Wasting Diseases (*Marasmus; Athrepsia; Gastro-intestinal Atrophy*).—*Characteristics*.—The fontanel becomes sunken as emaciation progresses.

Chief Signs.—Loss of weight or stationary weight; pinched face; wrinkled thighs; general emaciation with the exception of the "sucking pads"; aphthæ; erosion of the buttocks; gastro-enteric disturbances.

Excessive Diarrheas (*Gastro-Enteritis; Enterocolitis*).—*Characteristics*.—The fontanel becomes sunken from dehydration of the tissues.

Chief Signs.—Fever; vomiting; diarrhea which is usually first yellow, then green; prostration; stools mucoid and blood-tinged, especially in enterocolitis.

Less Common Cause.—Spurious hydrocephalus.

PREMATURE CLOSURE OF THE SUTURES

The main sutures of the cranium commonly ossify between the sixth and ninth months.

Microcephalus.—*Characteristics.*—The sutures may be completely ossified at birth, though at times ossification may be late.

Chief Signs.—See page 14.

Oxycephaly.—*Characteristics.*—The coronal and sagittal sutures may ossify prematurely.

Chief Signs.—See page 15.

Scaphocephaly.—*Characteristics.*—As in oxycephaly.

Chief Signs.—See page 15.

DELAYED CLOSURE OF THE SUTURES

Delay in closure of the sutures occurs in those diseases in which there is delayed closure of the fontanel. In addition the following conditions deserve mention.

Prematurity.—*Characteristics.*—The sutures are late in closing.

Chief Signs.—Premature labor; general underdevelopment.

Cerebral Tumors in Infants.—*Characteristics.*—The sutures may remain open from pressure of the tumor.

Chief Signs.—See above.

SWELLINGS ON THE HEAD

This section applies to swellings limited to the region of the scalp or skull, from the brows to the occiput, and from one mastoid to the other.

Sebaceous Cyst (*Wen; Steatoma*).—*Characteristics.*—The most common situation is on the scalp. Wens vary greatly in size (from a pea to a fist in exceptional instances); they may occur singly, or the scalp may be crowded with them. They are rounded or dome-shaped, freely movable on the deeper parts unless inflamed, and invariably attached to the skin at one point, where the orifice of the obstructed duct can often be seen, from which sebaceous matter can occasionally be expressed. As the skin over the swelling becomes thinned and stretched it becomes shiny, bluish or congested, and the hair-follicles atrophy, so that bald prominences result. Depending on their size, tension, and the character of the contents, they are firm but elastic, or soft and fluctuating. They occasion no discomfort unless inflamed or infected, when they swell, become tender, and the contents liquefy and rupture, with discharge, often fetid, the process subsiding to be repeated over again. When ulceration occurs they have been mistaken for epithelioma, and, in fact, they occasionally undergo carcinomatous degeneration.

Hematoma of the Scalp (*Subcutaneous, Subaponeurotic, and Subpericranial*).—*Characteristics.*—The subcutaneous variety is small, sharply localized, movable, and often associated with ecchymosis. The subaponeurotic form appears as a large fluctuating swelling, often reaching from the eyes to the occiput. In subpericranial hematoma, the swelling covers a part or the whole of one bone, usually

the parietal, but does not extend beyond the margins of the bone. It is not associated with ecchymosis, and is immovable, soft in the center, and hard at the margin. The margin is regular, pits on pressure, sometimes with moist crepitation, and is above the contour of the head.

Chief Signs.—History of a blow upon the head; x-ray.

Local Phlegmon of the Scalp (*Furuncle or Carbuncle*).—*Characteristics.*—There is a local, inflammatory, painful swelling, situated especially on the occipital portion of the scalp. Carbuncles more often originate on the neck below the hair margin and invade the latter by extension. These may extend deeply, and when their central slough is removed the bared bone may be exposed.

Subpericranial Abscess.—*Characteristics.*—These collections of pus are swellings limited in extent to the surface of a single cranial bone, and are often the result of the infection of a subpericranial hematoma.

Chief Signs.—History of the existence of a previous hematoma, or osteomyelitis or otitic or mastoid disease.

Mastoiditis.—*Characteristics.*—If the infection spreads outward there will be redness and edema of the skin over the mastoid and possibly the formation of a subperiosteal abscess, which may perforate and form a subcutaneous collection of pus with swelling, or spread downwards into the neck. In neglected cases the retroauricular fold just behind the concha becomes obliterated by the swelling.

Chief Signs.—See page 138.

Osteoma (*Exostosis*).—*Characteristics.*—These bony outgrowths of the skull appear as slowly growing, single or multiple, flat, rounded, or knoblike projections, usually sessile and densely hard. They rarely grow larger than a walnut. The larger the growth the more its tendency to become roughened and even pedunculated. An x-ray picture will be valuable.

Cranial Syphilis (*Gumma*).—*Characteristics.*—Gummata often appear upon the frontal region as tender, elastic, slightly elevated swellings over which the scalp may move freely. These chronic, painless swellings rarely attain a large size and are often multiple. When left to themselves, they may cause a slight, permanent, local thickening of the bone, sometimes extending over wide surfaces. They may break down, leaving chronic ulcers with ragged, undermined edges, exposing areas of more or less honeycombed bone with sequestra. Should healing take place, the resulting depressed scar, white, thin, attached, covered by dilated vessels, and surrounded by an irregular, elevated, bony ridge, tells the story.

Chief Signs.—History of syphilis; more or less pain, with nocturnal exacerbations; x-ray; positive Wassermann; therapeutic test.

Caput Succedaneum.—*Characteristics.*—The swelling is a soft painless tumor, situated over the occipital or parietal bones near the posterior fontanel of the newborn child. It does not conform in outline to one of the bones, as does a cephalematoma; it can be pitted on pressure; it does not fluctuate; and it disappears in a few days after birth.

Cephalematoma.—*Characteristics.*—This swelling, on the cranium of the newborn child, as a rule does not evidence itself until a day or two after birth, when it appears as a tumor the size of a hazelnut to an orange, rounded, elongated or kidney-shaped, usually limited in outline to one, or occasionally both parietal bones. Crying and straining tend toward its rapid enlargement until the pericranium

becomes greatly stretched and elevated high above the bone. Uncomplicated cases begin to subside by the first or second week, or more rarely, deformity, cyst, or abscess may result.

Dermoid Cyst.—*Characteristics.*—This is a swelling, usually single, occurring in the young and enlarging with age. This tumor is common in or near the orbit, and upon the skull it is found at the glabella, or external angular process of the frontal bone, more rarely over the mastoid process or in the midline over one of the fontanels. Cranial dermoids are usually deep-seated, having a close attachment to the pericranium, and lie in saucer-shaped depressions of bone which give them their relative immovability. They may occasionally pulsate when there is a skull defect.

Cephalocele.—*Characteristics.*—This congenital protrusion of the intracranial contents through a defect in the skull is divided according to its contents into meningocele, encephalocele, and hydrencephalocele or better encephalocystocele, the last of which is most common, containing a protrusion of the brain distended by fluid communicating with the ventricle. Cephaloceles are, as a rule, mesially placed over the occiput or sinciput, appearing upon the skull of the newborn child as tumors or swellings of varying size (small to very large). They may be pedunculated or sessile, and are usually smooth, soft, and fluctuating swellings, but may be irregular, lobulated, and quite firm and not uncommonly surmounted by true benign tumor growths. The protrusion increases in size when the child cries or strains, and often shows visible pulsation, spontaneous, or brought out by pressure. Attempted reduction may slow the pulse, lead to breathing difficulties, vomiting, convulsions, or unconsciousness. A large sac may be translucent if mostly fluid, and the overlying tissues may become thinned and excoriated.

Lipoma.—*Characteristics.*—There is a flat, disklike, semifluctuating, unlobulated tumor with a broad base, situated, as a rule, under the occipitofrontal aponeurosis, often appearing to occupy a depression in the bone. It rarely becomes pedunculated.

Hernia Cerebri.—*Characteristics.*—The tumor is a protrusion of the brain tissue beneath the scalp, through a traumatic defect in the skull after operation. It pulsates, gives an impulse on coughing, and is partly reducible, causing symptoms of compression of the brain. If there is a defect in the scalp it is called prolapsus cerebri. Following wounds of the brain there may be a swelling due to exuberant and edematous neuroglial granulations which goes by the name of fungus cerebri.

Thrombosis of the Lateral Sinus.—*Characteristics.*—The swelling is due to a painful edema along the line of the sinus over the mastoid and along the jugular if the latter is invaded.

Chief Signs.—History of antecedent suppurative middle-ear disease; chills, fever, sweats, leukocytosis; paralysis of the pneumogastric, glossopharyngeal, and spinal accessory nerves at times; engorgement of the jugular veins.

Aneurysm of the Scalp.—*Characteristics.*—In simple aneurysm there is a small soft swelling situated usually over an artery in the temporal region. In arteriovenous aneurysm, also usually situated in the temporal region but sometimes occipital, there is a progressively developing swelling due to the ballooning of the arteries and veins which intercommunicate, manifesting itself ultimately in the development of enormously dilated, pulsating vessels lying in palpable grooves.

The tumor-like swellings have a systolic hum and thrill. Pressure on the swelling may temporarily obliterate it.

Cavernous Angioma (*Hemangioma Cavernosum*).—*Characteristics*.—There is a soft, elastic, honeycombed, meshlike swelling with thin overlying skin, which in patches allows the dusky color of the tumor to show through. It occurs on top of the head, about the orbit, and from the glabella.

Chief Signs.—Congenital origin; partial or complete flattening and emptying of the tumor by pressure, which returns to status quo after release of pressure.

Sarcoma.—*Characteristics*.—Sarcomata of the scalp may appear as elevated, soft, nodular tumors, with overhanging edges and a more or less ulcerated surface, without deep invasion of the tissues; or as softer, more rapidly growing, more easily bleeding swellings, with a tendency to rapid extension and metastasis; or as dark melanotic growths arising from pigmented moles. Pulsating sarcomata arise from the perithelial cells of blood-vessels. Sarcoma of the skull may arise in any situation, or at any age (from the diploë, dura, or pericranium). There is a progressively growing tumor, pushing up the scalp as a sessile, domelike swelling with large, radiating, subcutaneous veins through the scalp in the involved region, finally breaking down into a denuded, bleeding, fungating, sloughing, ulcerating surface. Metastases and death occur within two years. X-ray examination will disclose the nature of the growth.

Carcinoma.—*Characteristics*.—Epitheliomata arising from warts, excrescences, cicatrices, or ulcers of the scalp occur as fungating, ulcerating growths. Carcinoma of the skull occurs only as a metastasis or extension from the scalp or elsewhere (breast, prostate).

Less Common Causes.—Papilloma (wart); diffuse cellulitis (phlegmon of the subaponeurotic layer following wounds); vascular nevi (hemangioma simplex, port-wine stain); cirroid aneurysm; elephantiasis nervorum (occurring with von Recklinghausen's disease); pneumatocele cranii; sinus pericranii (varix simplex communicans); traumatic or spurious meningocele (cerebrospinal fluid tumor following fracture, usually in a child); fibroma; keloid (observed in the suboccipital region in the Negro race); leontiasis ossea; gigantism; osteitis deformans; osteomyelitis; tuberculous osteitis of children (affects usually the temporal bone secondary to ear disease); echinococcus cyst; multiple myeloma (may be a swelling of a cranial bone; albuminuria, negative Wassermann, and x-ray will demonstrate it); chloroma (rapid growth in leukemic children).

ROLLING OF THE HEAD

(*The head cannot be supported.*)

(See also "Spasmodic Movements of the Head," page 21; and "Tremor or Shaking of the Head," page 22.)

The head cannot be lifted normally in the infant under two months of age.

Rickets.—*Characteristics*.—The head is sometimes too large and heavy, due to thickening of the cranial bones, for the infant to move it freely.

Chief Signs.—See page 13.

Idiocy.—*Characteristics.*—The head may roll due to weakness and lack of control of the neck muscles.

Chief Signs.—Delayed development; stupid expression; open mouth and drooling; protruding tongue; aimless movements of the hands; defective mentality (under three years).

Chronic Internal Hydrocephalus.—*Characteristics.*—The head may be too large for the muscles to sustain and move it freely.

Chief Signs.—See page 13.

Rotary or Nodding Spasm (*Spasmus Nutans*).—*Characteristics.*—This affection consists in a side-to-side oscillation of the head which may be slow or rapid, and in some cases is almost continuous. Some children have at times the nodding spasm also (vertical nodding), and in others this is the only movement seen.

Chief Signs.—Occurrence in infancy between the third and eighteenth months; may be nystagmus of one or both eyes; occasional convergent strabismus; bad hygienic surroundings (poorly lighted rooms); improvement in several months and ultimate recovery.

Friedreich's Ataxia.—*Characteristics.*—Irregular swaying movements of the head and shoulders, some of which are choreiform in character, may occur early and produce a tendency for the head to fall forward onto the chest.

Chief Signs.—Onset insidious; may be familial; clumsy and unsteady walking (swaying); ataxia of voluntary movements; early loss of the deep reflexes; lateral nystagmus; altered speech (slurring and explosive); pes cavus; scoliosis; slow progressive course.

Myasthenia Gravis.—*Characteristics.*—The head may show a tendency to fall forward upon the chest, due to weakness of the muscles of the neck.

Chief Signs.—Normal muscular movement followed on repetition by rapid weakening and paresis; bilateral ptosis; strabismus and diplopia; may be coarse nystagmoid movements; lost facial expression; mouth open; dribbling; weak mastication; may be nasal speech and regurgitation; may be dyspnea; myasthenic muscular reaction (quick loss of faradic stimulation); tendency to remissions.

Less Common Causes.—Amyotonia congenita; multiple neuritis.

SPASMODIC MOVEMENTS OF THE HEAD

(See also "Rolling of the Head," page 20; and "Tremor or Shaking of the Head," page 22.)

Habit Spasm.—*Characteristics.*—In some cases this affection takes the form of sudden spasmodic twisting of the head. These movements are at first infrequent, but as the habit becomes more firmly fixed the spasm recurs every few minutes. The eyes may wink at the same time.

Chief Signs.—Occurrence at any age after five years, most commonly beginning in youth; evidence of exaggerated nervousness; may be neuropathic heredity or eccentricity; may be history of mimicry or brain fag; history of gradual development; chronicity.

Head Banging.—*Characteristics.*—The head of the infant is thrown against the crib, sometimes so violently as to cause contusions. It may be repeated almost

every night and ceases when the infant sits up. It is an expression of extreme nervous irritability.

Chief Signs.—Occurrence in infants and very young children who have rickets or whose nutrition is below normal; may be latent or evident otitis media; absence of nystagmus.

Chorea (*Sydenham's Chorea; St. Vitus' Dance*).—*Characteristics.*—The head is jerked about spasmodically. The movements are irregular, arrhythmic, of varying intensity, not under control of the patient's will, increased by excitement, but cease during sleep.

Chief Signs.—Occurrence usually between five and fifteen years; spasmodic movements of hands, face, legs, whole body or one side; may be endocarditis; irritability; duration six to ten weeks.

Neurosis (*Rhythmic Hysterical Spasm*).—*Characteristics.*—Clonic contractions of the sternocleidomastoid muscles or of the rotatory muscles of the neck may produce rhythmic movements of the head. Rhythmic movements of the arms, legs, and jaws may likewise occur and in some instances there is a bowing movement—the salaam convulsion.

Chief Signs.—See page 8.

Spasmus Nutans.—See above, page 21.

Less Common Causes.—Friedreich's ataxia (sometimes choreiform); Huntington's chorea; progressive lenticular degeneration; epilepsy nutans.

TREMOR OR SHAKING OF THE HEAD

Paralysis Agitans (*Parkinson's Disease; Shaking Palsy*).—*Characteristics.*—Shaking of the head may occur, and is usually vertical, not rotary. The rate of oscillation is about five per second.

Chief Signs.—Occurrence after middle life; gradual onset; typical tremor in the hands, regular and rhythmic ("pill rolling"), later extending to the arms and legs; involvement first of one side, later the other; general muscular rigidity; bent attitude with arms flexed at the elbows; masklike facies; festinant or propulsion gait.

Senility.—*Characteristics.*—The tremor may be limited to the head. It is slow, fine and regular, is not affected by rest, but is aggravated by voluntary movement and excitement.

Chief Signs.—Occurrence late in life; may be tremor of the entire body of similar type; always bilateral; absence of rigidity; arteriosclerosis; wrinkled skin; loss of teeth; feebleness; mental changes.

Aortic Regurgitation.—*Characteristics.*—A rhythmic nodding of the head, synchronous with the heartbeat, occurs in some cases due to extreme arterial throbbing.

Chief Signs.—See page 11.

Less Common Causes.—Progressive lenticular degeneration; encephalitis lethargica; arteriosclerosis; Ménière's disease; epilepsy; cerebellar tumor; rickets; Friedreich's disease; hereditary cerebellar ataxia.

FORWARD DISPLACEMENT OF THE HEAD

(The head is displaced forward in the median line.)

Fracture-Dislocation of the Upper Cervical Vertebrae.—*Characteristics.*—In forward fracture-dislocation, the head is displaced forward and bent toward the chest. In profile the neck appears wider than normal.

Chief Signs.—History of injury; shock; local evidence of fracture; abnormal widening of the spaces between the spinous processes; symptoms of cervical cord compression; x-ray.

Tuberculosis of the Cervical Vertebrae.—*Characteristics.*—The head is displaced forward in the median line with gradual rigidity of the neck muscles.

Chief Signs.—Occurrence in childhood; pain rarely severe or absent, increased by local pressure, movements and jarring; may be irritation of cervical nerve roots; rigidity in the early stages due to muscle spasm, later to ankylosis; resistance to movements of the head; may be chronic retropharyngeal abscess; tuberculin test; x-ray.

HEAD TURNED TO ONE SIDE

Torticollis (Wry-Neck).—For causes of Torticollis see page 290.

Unilateral Dislocation of the Cervical Vertebrae.—*Characteristics.*—The head is bent toward the dislocated side and the face turned toward the uninjured side.

Chief Signs.—History of injury; resistance to opposed movement; pain on motion and tenderness on pressure; x-ray.

Cerebellar Tumor.—*Characteristics.*—When standing or sitting the head is generally tilted so that the occiput approximates the shoulder on the side of the lesion, and the chin is deviated to the opposite side; but the converse position has been described.

Chief Signs.—See page 8.

Cerebral Hemorrhage (Apoplexy).—*Characteristics.*—The eyes and head may be turned strongly toward the side of the lesion (conjugate deviation).

Chief Signs.—See page 91.

Paralytic Strabismus (Squint).—*Characteristics.*—The head is turned toward the side of the paralytic muscle and in the direction in which the paralyzed muscle would, if acting, move the eye.

Chief Signs.—Limitation of the movement of the eye on the side and in the direction of the paralyzed muscle; false projection of the visual image; diplopia; vertigo; nausea; uncertain gait improved by covering the paralyzed eye.

For causes of Strabismus see page 87.

Oculomotor Paralysis (Complete).—*Characteristics.*—The face is directed upward toward the sound side, and the head is inclined to the shoulder of the paralyzed side.

Chief Signs.—Immobility of the eyeball; deviation of the eye downward and outward; dilated and immobile pupil; paralysis of accommodation; crossed diplopia; slight exophthalmus.

RETRACTION OF THE HEAD

(See also "Convulsions," page 684; "Torticollis," page 290;
and "Opisthotonos," page 753.)

Cerebrospinal Meningitis (*Cerebrospinal Fever*).—*Characteristics*.—The patient lies with the body stiff and the head frequently drawn so far back that the occiput may be between the shoulder-blades.

Chief Signs.—See page 8.

Tuberculous Meningitis.—*Characteristics*.—In the second period of the disease the head is often retracted, but rarely to a marked degree.

Chief Signs.—Insidious onset; severe headache; change of disposition; irregular pulse and fever; signs of meningeal irritation; palsies; coma; discovery of a tuberculous focus; spinal fluid (lymphocytosis, tubercle bacilli, increased pressure).

Meningismus (*Meningism; Syndrome of Dupré*).—*Characteristics*.—The head is retracted as in meningitis.

Chief Signs.—Occurrence during an acute specific fever, especially typhoid and pneumonia, sometimes in alcoholism and middle-ear disease; spinal fluid examination (some increase in pressure with a slight increase in lymphocytes).

Retropharyngeal Abscess.—*Characteristics*.—After an interval of about a week the head is drawn far backward to relieve the pressure on the larynx; the chin is forward and the mouth open.

Chief Signs.—Occurrence in infants (up to two or four years); fever; prostration; altered voice (nasal tone); dyspnea; unilaterally enlarged cervical glands; deficient nursing; fluctuating tumor in the midline of the pharynx, visible or palpable.

Tetanus.—*Characteristics*.—The head is retracted to a varying degree. Late in the disease, following a period in which the slightest irritation causes a spasm (opisthotonos), the body may remain continuously in the position of opisthotonos with the head drawn far back.

Chief Signs.—History of a puncture wound (eight to twelve days previous); stiffness of the neck; locking of the jaws (trismus); risus sardonicus; fever; convulsions and stiffening (opisthotonos, orthotonos) with rigidity between paroxysms; duration not over seven to ten days; culture from the wound and inoculation of mice.

Cerebellar Abscess.—*Characteristics*.—Retraction of the head with rigidity of the neck is present.

Chief Signs.—History of middle-ear disease; headache (occipital); persistent vomiting; choked disk; drowsiness and apathy; slow pulse and respiration; fever and chills if acute; leukocytosis; vertigo; nystagmus to the side of the lesion; reeling gait; ataxia and paresis on the side of the lesion; decubitus (on the opposite side with the face turned to the side of the lesion).

Less Common Causes.—Cerebellar tumor (middle lobe or vermis); cerebellar hemorrhage (middle lobe); paramyoclonus multiplex; thrombosis of the superior longitudinal sinus; epilepsy (during the tonic stage).

ENLARGED VEINS OF THE HEAD

Congenital Hydrocephalus (*Chronic Primary Hydrocephalus*).—*Characteristics*.—The veins are visible beneath the skin and may be enormously distended.

Chief Signs.—See page 13.

Rickets (*Rachitis*).—*Characteristics*.—The veins of the scalp are often prominent.

Chief Signs.—See page 13.

Congenital Syphilis.—*Characteristics*.—In infants the veins are very prominent over the forehead and scalp.

Chief Signs.—See page 13.

Less Common Causes.—Mediastinal tumor; sinus thrombosis (superior longitudinal, lateral, cavernous); tuberculous meningitis; tumor of the neck; orbital aneurysm (unilateral).

BALDNESS OR THIN HAIR

(*Alopecia*)

(See also "Bald Patches on the Scalp," page 26.)

Loss of hair may vary in extent from slight thinning to complete baldness. After fevers, notably typhoid, or other severe systemic diseases, rapid hair shedding (defluvium capillorum) is not infrequently observed, but it rarely progresses to baldness and the hair usually grows out again unless there is a family tendency to baldness. Rarely thin hair and baldness are observed as a congenital condition. In men, general thinning of the hair often develops with advancing years (senile alopecia), usually preceded by graying of the hair; or there may be a general thinning with complete baldness at the vertex. In some men baldness develops prematurely (idiopathic premature alopecia), probably as an hereditary affection. It begins often at the vertex or at the temple and gradually extends backwards in an elliptical shape, encroaching on the sides and middle of the scalp and accompanied by a general thinning.

Severe psychic shock and lightning stroke have been handed down as causes of falling of the hair, but this is doubtful.

Pityriasis Simplex Capitis (*Dandruff*).—*Characteristics*.—In persistent cases there is a loss of hair, moderate or considerable in extent. This is known as alopecia pityroides when occurring in women. In them the hair becomes more sparse, shorter, less abundant and luxuriant, and with open spaces interspersed.

Chief Signs.—Occurrence usually in adults; dry scales on the hair and scalp, easily brushed off; absence of inflammation.

Secondary Syphilis.—*Characteristics*.—In the active stage of syphilis, several months or so following the initial lesion, there is usually a general thinning out of the hair, commonly limited to the scalp, but sometimes on other parts as well. This loss of hair often occurs in patches. The hair grows out again after treatment.

Chief Signs.—History of chancre (five or six weeks previous); rash (duration three to six weeks); condylomata; general enlargement of the lymphatic glands; anemia; fever; headache; insomnia; positive Wassermann.

Cretinism (*Infantile Myxedema*).—*Characteristics*.—The hair is scanty, coarse, and dry.

Chief Signs.—See page 13.

Myxedema.—*Characteristics*.—The hair is coarse and dry.

Chief Signs.—See page 14.

Chronic Arsenic Poisoning.—*Characteristics*.—The hair falls out.

Chief Signs.—History of prolonged use; headache; puffy eyelids; watering of the eyes; nausea, vomiting, and diarrhea; pigmentation of the skin (yellow to deep brown); keratosis of the soles and palms; herpes; eruptions of various kinds; brittle nails; peripheral neuritis.

Progeria.—*Characteristics*.—There is loss of hair as in old age.

Chief Signs.—Occurrence in children; incomplete development; premature decay; dry skin; attitude of old age; general decrepitude; arteriosclerosis; early death.

Less Common Causes.—Hypothyroidism; exophthalmic goiter; anemia; facial hemiatrophy (on the wasted side); tuberculosis; gout; action of thallium acetate or tin; chronic internal hydrocephalus; Mongolian idiocy; tabes dorsalis.

BALD PATCHES ON THE SCALP

Alopecia Areata.—*Characteristics*.—Circumscribed, round patches of baldness appear suddenly or gradually upon the scalp, without any obvious lesion of the skin. At first there is no change in the appearance of the skin, but later it may become pale and atrophied. Occasionally the eyebrows and beard are involved. Later lanugolike hairs may reappear in the patch. They may repeatedly fall out but hair may eventually return, though frequently depigmented.

Tinea Tonsurans (*Ringworm*).—*Characteristics*.—One or more rounded areas are present, varying in size from a fraction of an inch to a few inches in diameter, grayish in color, somewhat scaly and covered by broken hairs and stumps. The loss of hair is temporary unless suppuration (*tinea kerion*) has occurred.

Chief Signs.—See page 27.

Scars (*Cicatrices*).—*Characteristics*.—Hair is absent in the area of the scar.

Rickets (*Rachitis*).—*Characteristics*.—The hair is frequently worn from the occiput owing to restlessness during sleep.

Chief Signs.—See page 13.

Erysipelas.—*Characteristics*.—When the scalp is involved, the hair may fall out in the affected area, but the loss is seldom permanent.

Chief Signs.—See page 53.

Folliculitis Decalvans.—*Characteristics*.—The lesions may be discrete or scattered and are usually located on the anterior portions of the scalp. There is a central, dime to silver-dollar-sized or larger, irregularly rounded, depressed, bald, cicatricial patch, white, and often glistening, usually smooth, and the peripheral portion studded here and there with minute red follicular elevations, pustules or crusted points. The baldness is usually permanent.

Lupus Erythematosus.—*Characteristics*.—When the disease occurs upon the scalp, usually secondarily from the face, there are one to several variously sized

patches in which the skin presents the appearance of a scar with permanent and generally complete loss of hair.

Chief Signs.—See page 59.

X-Ray Depilation.—*Characteristics.*—The hair falls out twenty to thirty days after exposure and begins to grow out again two and a half months after the exposure unless there is an actual radiodermatitis. The regular rounded shape of the bald area is characteristic.

Chief Signs.—History of x-ray exposure.

Impetigo Contagiosa.—*Characteristics.*—The hair may fall out in the diseased area, but only after the lesions have healed. The patches are generally circumscribed in more or less well-defined islets.

Chief Signs.—History of impetigo (see page 28); scarlike fibrous condition of the scalp in the affected areas.

Favus.—*Characteristics.*—The disease may gradually invade more or less of the entire scalp. The hairs are involved early; they become brittle, lusterless, break off, some splitting up, and many falling out. The spot is covered by scattered yellowish points, cup-shaped disks or small confluent crusted lesions. At the border of the area, the disease is still active. The loss of hair is permanent.

Chief Signs.—See page 29.

Less Common Causes.—Chronic eczema (not permanent); psoriasis (not permanent); facial hemiatrophy; gummata; ichthyosis; keratosis; morphea; scleroderma; menopause (frontal and parietal irregular patches which grow out in one or two years); chronic tuberculosis (occipital and circumferential).

SKIN AFFECTIONS OF THE SCALP

(See also "Swellings on the Head," page 17.)

Pityriasis Simplex Capitis (*Dandruff; Seborrhea Sicca*).—*Characteristics.*—The hair and scalp are more or less covered with dry scales which can be easily brushed off; the skin is not inflamed. The hair is often dry. Alopecia is moderate.

Chief Signs.—Occurrence usually in adults.

Alopecia Areata.—See "Bald Patches," page 26.

Eczema.—*Characteristics.*—Two types of eczema are common upon the scalp, the vesicular eczema of children ("milk crust"), and the impetiginous or pustular eczema associated with pediculi. The former begins as an erythematous patch which burns and itches intensely; small vesicles soon develop, become confluent, rupture, and become covered by a mass of yellowish crusts or scales, beneath which the exudation continues. In the latter the discharge is purulent rather than serous.

Chief Signs.—Occurrence in infants and children; intense itching; chronicity.

Tinea Tonsurans (*Ringworm*).—*Characteristics.*—One or more rounded, scaly, elevated, grayish-colored patches are present, through which project dry, brittle, lusterless, broken-off hairs. The patches spread peripherally and several patches may coalesce, forming one large lesion.

Chief Signs.—Occurrence in children; chronicity; history of contact; spontaneous termination at puberty; demonstration of the microsporon or trichophyton on broken hairs.

Pediculosis Capitis.—*Characteristics.*—Itching of the scalp is usually the first sign, then a search discloses nits on the hairs and the parasites at the base of the hairs near the scalp.

Chief Signs.—May be pustules on the neck and enlarged lymph glands.

Seborrhea Capitis.—*Characteristics.*—The scalp and hair are abnormally greasy, and a number of minute, white, vermicelli-like bodies can be squeezed out of the hair follicles. The skin of the forehead and nose frequently becomes shiny before the scalp is affected.

Chief Signs.—Occurrence between fifteen and fifty years.

Seborrheic Dermatitis.—*Characteristics.*—The disease begins upon the scalp as small papules, which may be discrete or grouped and coalescent. The lesions are covered by soft, loosely adherent, yellow crusts, that may bind the hairs together; the latter are often greasy. The skin beneath the crusts is markedly inflammatory.

Chief Signs.—Occurrence between fifteen and fifty years; moderate itching; may extend to the face, neck, body, and limbs.

Pityriasis Steatoides (Seborrhea Oleosa).—*Characteristics.*—The scalp is usually almost entirely covered with yellowish greasy scales, that may form crusts in places. The scales adhere to some extent to both the hair and the scalp. The scalp beneath may be somewhat inflamed. The hairs are usually very greasy and tend to fall out.

Chief Signs.—Occurrence usually between twenty and thirty years.

Impetigo Contagiosa.—*Characteristics.*—Disseminated or later confluent (in patches), shallow excoriations are present which secrete a serous fluid and are covered by thin lamellated crusts and associated with very little inflammation. The crusts appear to be stuck on.

Chief Signs.—Occurrence commonly in children; frequent association with pediculosis; occurrence of typical lesions on the face; infectious tendency.

Psoriasis.—*Characteristics.*—The lesions of psoriasis upon the scalp form serpiginous areas and often extend down upon the forehead for the fraction of an inch. The lesions are of dull pink or red color, sharply defined, somewhat elevated, are surrounded by healthy skin, and covered by abundant dry, pearly, overlapping scales which are readily detached. The hairs pass through these areas without being affected. The skin beneath is dry and slightly excoriated.

Chief Signs.—Onset usually in young adulthood, absence of itching; chronicity with improvement in summer, exacerbation in winter.

Dermatitis Papillaris Capillitii (Acne Keloid).—*Characteristics.*—The eruption appears at the back of the neck and in the lower portion of the back of the scalp, sometimes as a more or less linear band, and sometimes as an irregularly shaped patch. The primary lesions are hard papules situated at the bases of the hairs, frequently with pustular folliculitis of slight extent. There is always considerable hair loss between the papules. The papules vary from one-sixteenth to one-half inch in diameter, the largest being due to coalescence. They protrude considerably above the level of the skin as semiglobular swellings, and are firm and hard. Many of them contain small pustules and some may be surmounted by crusts.

Chief Signs.—Occurrence usually in Negroes; absence of subjective symptoms, but slight itching may be present.

Favus.—*Characteristics.*—There is at first a superficial scaly macule. The follicles are soon invaded and characteristic yellow crusts appear, surrounding the bases of the hairs. These crusts are usually 3 to 4 mm. in diameter, with the concave side uppermost. At first they are discrete but later confluent and there is simply a heavy yellow crust upon the scalp. The hairs are lusterless and brittle, and break, split, or fall so that areas of baldness which may be permanent are caused.

Chief Signs.—Commencement usually under fifteen; history of contact with Italian or Russian immigrants; chronicity; demonstration of the fungus (*Achorion schoenleinii*).

Less Common Causes.—Occipital alopecia of infants; nevi; congenital alopecia; atrichosis; hypertrichosis; monilithrix; ichthyosis; trichotillomania; post-impetiginous alopecia; postfuruncular alopecia; lupus erythematosus; lichen planus; postinfectious alopecia; syphilis of the scalp; alcoholic pruritus of the scalp; necrotic acne; cicatrices; molluscum contagiosum; warts; sebaceous cyst; epithelioma; cornu cutaneum; erysipelas.

SKIN AFFECTIONS OF THE EYEBROWS

The eyebrows may be congenitally underdeveloped (atrachosis), in other cases they may be redundant and come together in the middle (hypertrichosis).

Pityriasis Steatoides (*Seborrhea Oleosa*).—*Characteristics.*—The eyebrows are covered with yellow greasy scales. It is usually accompanied with alopecia which may be permanent. It may also lead to eczema.

Chief Signs.—Usually association with a similar condition of the scalp; chronicity with exacerbations.

Syphilitic Alopecia.—*Characteristics.*—The eyebrows appear ragged as though cut transversely at different points by a scissors. It is especially pronounced over the inner half of the eyebrows (as opposed to myxedema).

Chief Signs.—Other signs of secondary syphilis.

Less Common Causes.—Alopecia areata; sycosis; cyst; keratosis pilaris; leprosy; eczema (following pityriasis steatoides).

THE FACE

(As a Whole)

SYMPTOMS	PAGE
Pain in the Face	30
Pallor or Sallowness of the Face (Permanent)	31
Sudden or Transient Pallor of the Face	36
Flushed Face	37
Sudden or Transient Flushing of the Face	38
Characteristic or Peculiar Facies	39

Risus Sardonius	44
Facial Spasm, Twitching, Grimacing	45
Facial Paralysis	47
Flapping of the Cheeks during Breathing	49
General Swelling of the Face	49
Thickened Features	51
Inequality in the Two Sides of the Face	52
Local Swellings of the Face	53
Ulcers of the Face	56
Skin Affections of the Face	56

For Jaundice, Pigmentation, and Cyanosis of the face, see under General Symptoms, pages 689, 732, 787.

PAIN IN THE FACE

(See also Various Subdivisions of the Face and "Headache.")

Trauma.—*Characteristics.*—Any blow or injury to the tissues of the face will naturally cause pain in proportion to its severity.

Dental Caries.—*Characteristics.*—With inflammation and destruction of the pulp, there is a severe aching pain referred to a segmental area on the surface of the face, varying with the particular tooth implicated. After the pulp is dead, local suppuration may start a neuralgia which may not only spread along the nerve branch supplying the tooth socket, but may extend into neighboring branches and into the divisions of the trigeminal nerve.

Chief Signs.—Dental examination (visible caries, increased sensibility to mechanical, electrical, and thermic stimuli).

Maxillary Sinusitis (*Antritis; Empyema of the Antrum of Highmore*).—*Characteristics.*—At the beginning of an attack there is a sense of fullness and pressure beneath the orbit, and pain, sometimes agonizing in character, intermittent and neuralgic, involving the whole side of the face. The pain is constant in acute cases, until the advent of free discharge from the sinus. In chronic cases the pain is less constant, except during exacerbations. The teeth of the upper jaw may be painful, and the pain may radiate to the orbit, supra-orbital region, or toward the ear.

Chief Signs.—Heat, swelling, and redness over the antrum (acute cases); discharge of pus from one nostril, periodic in character; painful mastication, the teeth feeling as if elongated and crowded out of their sockets; tenderness upon pressure or percussion over the antrum; transillumination and x-ray (opacity of the antrum); rhinoscopy (revealing the source of the pus).

Abscess and Furuncle.—*Characteristics.*—There is severe, throbbing pain in the region of the infection.

Chief Signs.—Heat, redness, swelling, tenderness; may be fluctuation.

Trigeminal Neuralgia (*Tic Douloureux*).—*Characteristics.*—There are paroxysms of acute pain in the distribution of one or more of the trigeminal nerves, usually on one side only. The pain is described as beginning in spots beneath the skin, and radiating along the peripheral branches of the nerve. The intervals between the paroxysms vary from seconds to months, according to various factors, but they tend to become shorter and the paroxysms more severe and more extensive in their distribution. The pain may be agonizing, and begins and ends suddenly, with complete relief between attacks.

Chief Signs.—Onset after thirty-five years of age; tender points at the exit of the nerve from the skull; hyperesthesia along the course of the nerve; excitability by peripheral stimuli; facial spasm; flushing; photophobia; lacrimation and salivation during a severe attack.

Herpes Zoster.—*Characteristics.*—The pain usually precedes the herpetic eruption by some days, and is distributed along the course of a branch of the trigeminal nerve, usually the ophthalmic. The pain is severe, usually of a neuralgic character, and persists after the herpes has disappeared, often lasting for months or years.

Chief Signs.—Malaise; may be fever; vesicular eruption along the course of the branches of the ophthalmic nerve (clear vesicles on red bases, becoming cloudy, rupturing, and forming crusts, which, dropping off, leave scars).

Less Common Causes.—Erysipelas (sensation of burning, tension, or stiffness); cerebral tumor (at the base of the brain in the middle fossa); tumor of the cranial nerves; hemorrhage in the pons; sclerosis of the pons; tumor at the base of the skull in the region of the foramen ovale and rotundum; gummatous meningitis; gummatous periostitis; lesions of the tongue; tabes dorsalis (lightning pains); psychalgia (pseudoneuralgia).

PALLOR OR SALLOWNESS OF THE FACE (Permanent)

Some individuals are normally paler than others, especially those who have insufficient sunlight. Sallowness is normal in brunettes and in natives of hot climates. Anemia due to any cause is accompanied by pallor, which affects not only the skin but also the conjunctivæ and mucous membranes as well. In many of the diseases below, the pale skin is due to anemia; but pallor is not a synonym for anemia. In nearly all acute febrile diseases there is pallor, and the complexion is pale or sallow in most chronic intoxications, suppurative, and wasting diseases. The presence of pallor does not aid greatly in the diagnosis but serves to give the general impression of serious illness. Throughout the cold season, city dwellers who spend most of their time in stuffy, overheated houses, may become paler than normal (so-called winter anemia).

The yellowness of the sallow face is easily distinguished from the yellow tint of slight jaundice by the absence of color in the sclera, and, of course, of bile pigment in the urine.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—Morning pallor is often very noticeable in the incipient stage, but is apt to be masked in

the afternoon by flushing of the cheeks. In the second and third stages, pallor may or may not be marked.

Chief Signs.—Insidious onset; loss of weight, strength, and appetite; persistent cough, worse in the morning; may be hemoptysis; night sweats; afternoon pyrexia; rapid pulse; crepitant râles at one apex brought out by coughing (incipient stage), with changes in the breath sounds and slightly impaired resonance; diminished expansion; later, signs of consolidation or cavitation and involvement of the other lung; tubercle bacilli in the sputum; tuberculin reaction; x-ray.

Arteriosclerosis.—*Characteristics.*—In some patients there is marked pallor, in others the complexion is florid.

Chief Signs.—See page 9.

Aortic Regurgitation.—*Characteristics.*—Anemia is often a marked feature, the face especially presenting a pale grayish color.

Chief Signs.—See page 11.

Chronic Osteo-Arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics.*—Pallor is usual and there may be irregular areas of yellow pigmentation.

Chief Signs.—Onset between forty and sixty; chronicity; nodular swelling of multiple joints; pain in the joints, often increased in wet weather, worse at night; limitation of movement; crepitus in motion of the joints; muscular wasting; Heberden's nodes; may be fever.

Acute Nephritis.—*Characteristics.*—A waxy pallor and puffiness of the face or ankles are usually the first symptoms noted. Anemia is early and severe.

Chief Signs.—Onset variable, acute or insidious; headache; puffiness of the eyelids, face, and ankles; nausea and vomiting; fever 102°–103°; dry skin; furred tongue; scanty urine; may be increased blood-pressure; urinalysis (dark or smoky, high specific gravity, large amount of albumin, blood cells, débris, and casts of all kinds); may be albuminuric retinitis (ophthalmoscopy).

Chronic Parenchymatous Nephritis.—*Characteristics.*—The patient becomes pale and there is a puffiness under the eyes, especially in the morning.

Chief Signs.—See page 50.

Constipation.—*Characteristics.*—The skin is muddy, especially in girls; acne is common and chlorosis may follow. A slight icteroid tint is not uncommon; there may be dark circles under the eyes.

Chief Signs.—Lassitude; headache; foul breath; anorexia; furred tongue; intestinal stasis.

Menorrhagia and Metrorrhagia.—*Characteristics.*—Pallor is often present, the degree depending upon the amount of blood lost and the frequency of the hemorrhages. For causes of Menorrhagia and Metrorrhagia see page 572.

Cancer.—*Characteristics.*—Except in carcinoma of the stomach where early blood loss occurs, the complexion may show little change until the late stages when cachexia is said to exist. At this time there is developed a dirty yellowish, yellowish-brown, or brownish-green color, associated with marked debility and emaciation.

Chief Signs.—Local evidence of tumor growth; symptoms dependent on the site; biopsy; x-ray.

Chronic Gastritis.—*Characteristics.*—The complexion and conjunctivæ are muddy.

Chief Signs.—See page 9.

Duodenal Ulcer.—*Characteristics.*—Pallor may be extreme from anemia due to repeated hemorrhages.

Chief Signs.—Epigastric pain two hours after eating and often at night, eased by food and soda; may be tenderness; melena (occult blood or tarry stools); flatulence and heartburn; hyperacidity; tendency to long remissions; gastro-intestinal x-ray study (constant filling defect of the duodenal cap, hypermotility).

Gastric Ulcer.—*Characteristics.*—Anemia of all degrees may occur dependent on the chlorosis, hematemesis and the diet. In acute ulcer the patient appears pale, and in chronic ulcer flabby, more cachectic. Wasting is present but not extreme.

Chief Signs.—Epigastric pain after eating; dyspepsia; epigastric tenderness; vomiting at the height of pain with relief; hematemesis; hyperacidity; constipation; gastro-intestinal x-ray study (constant filling defect in the stomach wall).

Cardiac Decompensation (*Heart-Failure*).—*Characteristics.*—There is pallor or pallor masked by cyanosis. This refers to decompensation whether mild or severe, whether causing merely slight dyspnea or exertion or orthopnea with edema.

Chief Signs.—Dyspnea on exertion or constantly; dizziness; precordial pain or distress; usually edema, beginning in the feet; cough, oliguria; heart usually enlarged; poor muscle tone (cardiac); may be various murmurs and arrhythmias; may be liver enlargement or pulsation; may be ascites; usually a fall in blood-pressure; x-ray; electrocardiography.

Malignant or Ulcerative Endocarditis (*Infective Endocarditis*).—*Characteristics.*—Anemia, with pallor, is often marked, especially when the infection is severe.

Chief Signs.—Often a history of acute rheumatism or previous endocarditis; varying symptomatology of septicemia; cardiac and embolic phenomena; markedly irregular or continuously high pyrexia; profuse sweats; rigors; progressive weakness; enlarged spleen; various rashes, often purpuric; variable cardiac murmurs; rapid or irregular pulse; leukocytosis; may be embolism; blood culture.

Acute Fibrinous Pericarditis.—*Characteristics.*—In acute rheumatism pericarditis is suggested by dyspnea, pallor, a pinched expression, and a feeble, rapid pulse.

Chief Signs.—Substernal pain (may be mild); feeble, rapid pulse; fever; dyspnea; pericardial friction rub (superficial, to-and-fro with the heartbeat, near the center of the heart or close to the sternum, varying from time to time).

Septico-Pyemia.—*Characteristics.*—Great pallor of the skin is present which later may become bile-tinged.

Chief Signs.—Presence of a focus of infection; intermittent chills, fever, sweats; emaciation; manifestations of disturbance in various organs which may be attacked; splenic enlargement.

Empyema (*Purulent Pleurisy*).—*Characteristics.*—If in a child there will be gradually developing pallor and weakness, with sweats and irregular fever.

Chief Signs.—Often history of preceding pneumonia; insidious onset; irregular pyrexia, malaise, sweating, chills; leukocytosis; physical signs of pleural effusion

(bulging, flatness, absence of breath sounds, or tubular breathing in children); paracentesis; x-ray.

Congenital Syphilis (*Hereditary Syphilis*).—*Characteristics*.—In the great majority of cases the infant appears healthy at birth and continues so for a variable time. Then as local symptoms of syphilis develop the infant's nutrition suffers, and it becomes extremely anemic. The skin develops a peculiar sallow color which has been well described as "café au lait."

Chief Signs.—Aged appearance; snuffles in three to eight weeks; skin affections (roseola, desquamating palms, ulceration of the corners of the mouth called rhagades) appearing in three to twelve weeks; bone affections (epiphysitis); positive Wassermann; at second dentition or at puberty, keratitis, iritis, choroiditis; thickening of the long bones, especially the tibia; Hutchinson's teeth; prominent frontal bosses.

Acquired Syphilis (*Secondary Syphilis*).—*Characteristics*.—In the primary stage the general condition of the patient is usually good. In the secondary stage, in many cases the syphilitic poison causes a pronounced anemia which gives to the face a muddy pallor, and there may even be a light yellow tingeing of the conjunctivæ or of the skin. This syphilitic cachexia may in some instances be extreme.

Chief Signs.—History of chancre (five to six weeks previous); rash (duration three to six weeks); sore-throat; mucous patches; condylomata; general enlargements of the lymphatic glands; anemia; fever; headache; insomnia; positive Wassermann.

Cirrhosis of the Liver (*Alcoholic*).—*Characteristics*.—Later in the disease the patient has an unmistakable hepatic facies; the complexion is muddy and icteroid, and the face is thin, with eyes sunken, conjunctivæ watery, and the nose and cheeks showing distended venules.

Chief Signs.—Occurrence in middle age; history of alcoholism; liver small or enlarged, surface hobnailed or smooth; dyspnea; hematemesis; slight or absent jaundice; ascites; hepatic facies; spleen usually palpable; venules along the costal margin; may be slight fever; later, toxic symptoms.

Chronic Lead Poisoning (*Plumbism; Saturnism*).—*Characteristics*.—Pallor is often present; a condition known as saturnine cachexia may occur.

Chief Signs.—Occupation; constipation; general lassitude; blue line on the gums; may be history of lead colic; may be wrist-drop; basophilic degeneration and stippling of the red cells with anemia; arteriosclerosis; presence of lead in the urine and feces; may be encephalopathy.

Scurvy (*Scorbutus*).—*Characteristics*.—Early symptoms are loss in weight, progressive weakness, marked pallor, and the skin becomes rough and dry.

Chief Signs.—Insidious onset; general weakness; anemia; swollen, bleeding gums; hemorrhages from the mucous membranes and into the skin; albuminuria; inquiry into dietetic deficiency (lack of fresh foodstuffs).

Infantile Scurvy (*Barlow's Disease*).—*Characteristics*.—Profound anemia is the most marked of the constitutional symptoms, and is proportional to the amount of limb involvement. A certain earthy-colored or sallow tint is developed, after which bruisedlike ecchymoses may appear.

Chief Signs.—Occurrence in infants; use of proprietary foods or condensed milk; may be sudden appearance of severe symptoms; swelling and severe pain in

the lower ends of the femurs, less often the upper ends of the tibia and upper extremities; may be swelling of the gums; occasionally orbital hemorrhage with proptosis; fractures at epiphyses; hematuria; fever.

Chlorosis.—*Characteristics.*—The complexion is pale with a curious yellow-green tinge ("green sickness"), which combined with plumpness and puberty constitute the characteristic syndrome.

Chief Signs.—Easy fatigue; shortness of breath; giddiness and faintness; palpitation; disturbances of menstruation; constipation; headache; cold feet; emotional instability; appetite variable and capricious; blood examination (hemoglobin markedly reduced, red cells about 4,000,000, color index minus 1, may be changes in erythrocytes).

Pernicious Anemia (*Addisonian Anemia; Idiopathic Anemia*).—*Characteristics.*—The combination of pallor with good nutrition is striking. There is a peculiar lemon-yellow tint.

Chief Signs.—Insidious onset usually between twenty-five and forty-five years; great weakness; gastro-intestinal disturbances; faintness; palpitation; dyspnea on exertion; edema of the feet; tingling and numbness of the feet or the hands; may be symptoms of posterior or posterolateral sclerosis (loss of deep sensibility, spasticity); blood examination (low red cell count, color index 1 plus, deformity of erythrocytes, polychromatophilia, normoblasts, megaloblasts).

Ankylostomiasis (*Hookworm Disease*).—*Characteristics.*—Pallor is often marked, anemia with general lethargy being essential symptoms.

Chief Signs.—Occurrence in the Southern States; chronicity, anemia; emaciation; weakness; anorexia; perversion of the appetite; epigastric pain; "ground-itch"; eosinophilia; examination of the feces (revealing the ova, occult blood).

Exophthalmic Goiter (*Graves's Disease*).—*Characteristics.*—As a result of impaired nutrition, anemia progressively increases. The skin in some cases shows a pigmentation closely simulating that of Addison's disease.

Chief Signs.—See page 40.

Splenic Anemia (*Banti's Disease*).—*Characteristics.*—The anemia may cause only a slight pallor, or it may be as intense as that of progressive pernicious anemia.

Chief Signs.—Insidious onset; progressive course; enlargement of the spleen; anemia (decreased red cells and hemoglobin, leukopenia, relative lymphocytosis); recurring hematemesis; may develop enlarged liver, ascites and jaundice (Banti's syndrome).

Chronic Myeloid Leukemia.—*Characteristics.*—A gradually developing pallor together with other symptoms of anemia may be the first symptoms noted. As the disease progresses pallor becomes more marked.

Chief Signs.—Occurrence usually between twenty-five and forty years; insidious onset; enlargement of the abdomen (by the spleen); wasting; retinal hemorrhages; cough; attacks of diarrhea; periods of fever; deafness, often sudden; edema of the legs; may be palpable liver; may be various hemorrhages (especially from the nose and gums); blood cell examination (greatly increased leukocytes, myelocytes, myeloblasts, and transitional white cells; increase of granulocytes, normoblasts and megaloblasts).

Addison's Disease.—See "Pigmentation of the Skin," page 787.

Less Common Causes.—Focal infections; tabes dorsalis; "neurasthenia";

fatty degeneration of the heart; dilatation of the heart; aortic stenosis; mitral stenosis; myocarditis; amenorrhea; ovarian disease; hyperlactation; atony of the stomach; colitis; duodenal catarrh; amyloid disease; pulmonary thrombosis; bronchiectasis; arsenic poisoning; salicylism; mercurialism; bromism; typhoid fever; trichiniasis; plague; relapsing fever; dysentery; Bilharzia; cholera; abscess of the liver; mediastinitis; Hodgkin's disease; status lymphaticus; tabes mesenterica; chloroma; Gaucher's anemia; myxedema; epilepsy; pernicious malarial fever; hydatid disease; facial hemiatrophy; periarteritis nodosa; aplastic anemia; pseudoleukemia infantum; intestinal helminthiasis; benign gastric tumor.

SUDDEN OR TRANSIENT PALLOR OF THE FACE

Sudden pallor accompanies sudden fright, excessive use of tobacco, and poisoning by depressant drugs. Gastric irritation due to overindulgence or rapid eating may also cause sudden pallor and is accompanied by vertigo, nausea, and epigastric distress. Severe pain such as colic is often accompanied by pallor.

Syncope (*Fainting*).—*Characteristics*.—There is a more or less profound state of unconsciousness, accompanied by pallor of the face and lips, marked weakening of the pulse, cold sweat, and cold extremities.

For causes of Syncope, see page 811.

Shock and Collapse.—*Characteristics*.—The usual symptoms are pallor, cold sweat, pinched face, dilated and feebly reacting pupils, weak and usually accelerated pulse, shallow, irregular breathing, mental apathy, subnormal temperature, impaired sensation of the skin, retention of urine, and restlessness.

For causes of Shock and Collapse, see page 763.

Acute Hemorrhage.—*Characteristics*.—The pallor increases with the loss of blood.

Chief Signs.—Presence of hemorrhage, internal or external; great restlessness, anxiety and foreboding; air hunger; thirst; large, rapid, easily compressible pulse; loss of vision.

Chills or Rigors.—*Characteristics*.—Pallor develops suddenly during a chill, accompanied by a marked tremor of the whole body.

For causes of Chills or Rigors, see page 673.

Bronchial Asthma (*Spasmodic Asthma*).—*Characteristics*.—During a paroxysm there is pallor, which, however, may be masked by the duskiness of the cyanosis. The countenance is anxious.

Chief Signs.—Onset commonly under ten years, persisting to old age; recurring paroxysms:—sudden onset, frequently nocturnal; slow, violent respiratory movements with all accessory muscles; short inspiration with long, wheezy expiration; cold sweat; small pulse; hyperresonance; numerous râles and noises; cough at the end with expectoration of viscid sputum containing Curschmann's spirals, eosinophils, and Charcot-Leyden crystals; eosinophilia; interval:—may be bronchitis and emphysema; may be associated hay-fever.

Minor Epilepsy (*Petit Mal*).—*Characteristics*.—The expression becomes fixed, the pupils dilate, and the face is pale.

Chief Signs.—Recurring attacks of transient unconsciousness without convul-

sions; micturition during the attack; may be automatic actions, especially undressing; duration a few seconds.

Less Common Causes.—Trance; tuberculous meningitis; Ménière's disease.

FLUSHED FACE

A flushed face is common in many fevers and especially in children. In pneumonia the redness may be confined to, or more marked in, the cheek on the diseased side. In these cases the presence of fever readily explains the flushing. Some individuals are normally possessed with a more florid countenance than others. This is particularly true of those of a robust, plethoric build.

Acute Alcoholism.—*Characteristics.*—The face is flushed, sometimes slightly cyanosed, in the early stage.

Chief Signs.—History of overindulgence; dilated pupils; mental disturbance; muscular incoördination and ataxic gait; deep respiration; full pulse; later narcosis; alcoholic odor of the breath.

Chronic Alcoholism.—*Characteristics.*—The face is congested, causing a dusky redness with dilated venules; the nose is often large and red, and the conjunctivæ watery and often icteroid.

Chief Signs.—History of prolonged abuse; mental changes (deficiency of concentration, memory, and judgment; irritability or brutality; carelessness of clothes); tongue furred; breath heavy; headache; nausea; morning anorexia; constipation; husky voice; tremor of the hands and tongue; may be multiple neuritis; cirrhosis of the liver, fatty degeneration of the heart, arteriosclerosis, and chronic nephritis.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—A hectic flush is common in the afternoon even in patients who have a very slight rise in temperature. The flush is usually confined to the side affected, or if both lungs are involved, will be most marked on the side having the most marked disease.

Chief Signs.—See page 31.

Apoplexy (*Cerebral Hemorrhage*).—*Characteristics.*—The face is injected, sometimes cyanotic, but may be of an ashen gray hue.

Chief Signs.—See page 91.

Mitral Stenosis.—*Characteristics.*—An appearance of ruddy health is often present, due to the congestion of the fine capillaries over the cheek bones.

Chief Signs.—See page 433.

Sunstroke (*Insolation; Thermic Fever*).—*Characteristics.*—The face is flushed and the skin hot and dry.

Chief Signs.—See page 11.

Carbon Monoxid Poisoning (*Coal-Gas Poisoning*).—*Characteristics.*—Coma due to poisoning by carbon monoxid is sometimes obvious from the patient's bright cherry-red color.

Chief Signs.—Generally direct evidence of the mode of poisoning such as the fact that the patient is found in a room with the gas turned on, or has been subjected to fumes of slow combustion (stove, brazier, limekiln).

Unilateral Paralysis of the Cervical Sympathetic.—*Characteristics.*—Homolateral hyperemia of the skin of the face and head is present.

Chief Signs.—Myosis of the homolateral pupil; retained pupillary reflexes; narrowing of the palpebral fissures; enophthalmos; usually presence of some intra-thoracic or cervical cause of pressure, or injury of the neck.

Polycythemia Rubra Vera (*Erythremia; Vaquez's Disease; Osler's Disease*).—**Characteristics.**—The superficial blood-vessels, capillaries, and veins look full, so that the skin is always congested, in warm weather of a brick-red or plum color, in cold weather cyanosed. The engorgement of the face may be extreme, extending to the conjunctivæ.

Chief Signs.—Headache; giddiness; cyanosis in cold weather; vasomotor instability; enlarged spleen; increase in total blood volume; red cells seven to twelve million per c. mm.; hemoglobin, 130 to 160 per cent; low color index; albuminuria; high blood-pressure; may be hemorrhages from the mucous membranes or under the skin; may be ascites.

Less Common Causes.—Belladonna poisoning; cerebral concussion; dyspepsia; pleurisy; acute pneumonia (affected side); uterine myomata; hyoscyamus poisoning; migraine (unilateral); myxedema (may be red splotches on the cheeks); chlorosis rubra; cirrhosis of the liver; "hysteria"; arteriosclerosis (in plethoric individuals); Mongolian idiocy (florid mottled complexion); aneurysm of the ascending aorta (between the pericardium and the innominate artery); diabetes; acne rosacea.

SUDDEN OR TRANSIENT FLUSHING OF THE FACE

Blushing which arises invariably from emotion (shyness, shame, and modesty) is a form of flushing often seen and easily recognized. Flushing partakes of the same nature as palpitation of the heart and occurs in many of the same conditions. The subjective sensation accompanying the flushing varies and is sometimes painful. It is usually a feeling of heat and is followed by a cold stage and various other subjective phenomena. It may occur in the course of pregnancy and lactation and with menstruation. Indigestion, feeble circulation, and general debility are non-specific conditions in which it is not uncommon.

Menopause (*The Climacteric; Change of Life*).—**Characteristics.**—Paroxysms of flushing of the face and head with a sensation of heat occur (hot flushes).

Chief Signs.—Age thirty-five to fifty; menstrual irregularity or amenorrhea; palpitation; weakness; perspiration; anemia; mental depression; emotional instability; insomnia.

Exophthalmic Goiter (*Graves' Disease*).—**Characteristics.**—An erythematous flushing is common, accompanied by other vasomotor phenomena, as forcible throbbing of the arteries, flushes of heat, and profuse perspiration.

Chief Signs.—See page 40.

Neurosis (*"Neurasthenia"*).—**Characteristics.**—Flushing is prominent in some cases, associated with rapid, vigorous heart action, pounding in the ears or temples, and disturbances in sweat-gland secretion.

Chief Signs.—See page 40.

Less Common Causes.—Tuberculous meningitis; constipation; amenorrhea; chlorosis; dysmenorrhea; typhoid fever; trifacial neuralgia; nitroglycerin and amyl nitrite effect; epilepsy (aura).

CHARACTERISTIC OR PECULIAR FACIES

In many diseases a study of the physiognomy will often give a clue to the diagnosis.

Dyspnea.—*Characteristics.*—The mouth is open, the lips and tongue are dry, the nostrils dilate with each inspiration, and the face presents a bluish pallor of cyanosis. The expression is anxious.

For causes of Dyspnea, see page 391.

Typhoid Status.—*Characteristics.*—At the height of the fever the expression is dull and apathetic, the cheeks are flushed, the eyes are bright, the tongue is dry and the teeth covered with brownish sordes. The lips are tremulous.

For causes of Typhoid Status, see page 819.

Impending Death.—*Characteristics.*—The hippocratic facies is present: "A sharp nose, hollow eyes, collapsed temples, the ears cold, contracted, and their lobes turned out; the skin about the forehead being rough, distended, and parched; the color of the whole face being brown, black, livid, or lead-colored."

Adenoids.—*Characteristics.*—The expression is stupid or even idiotic, the nostrils are pinched, the mouth large and open, the lips thick and dry, and the eyelids drooping.

Chief Signs.—Audible breathing during the day, snoring at night; toneless voice; impaired hearing; susceptibility to colds; backward development; deformed thorax; examination with the finger or nasopharyngoscope.

Acute Nephritis.—*Characteristics.*—A pale puffy face, with baglike swellings beneath the eyes is seen.

Chief Signs.—See page 49.

Chronic Parenchymatous Nephritis.—*Characteristics.*—The face is expressionless, puffy, and putty colored.

Chief Signs.—See page 50.

Congenital Syphilis (*Hereditary Syphilis*).—*Characteristics.*—In the late stages (after ten or twelve years of age), the facies is distinctive. There is an overhanging forehead, often with frontal bosses, a depressed nasal bridge ("saddle nose"), striated scars radiating from the lips (rhagades), Hutchinson's teeth, often corneal opacities, and a muddy complexion. The face may be weazened and old looking.

Chief Signs.—History of a syphilitic mother; "saber shins"; deafness; painless, symmetrical, effusive arthritis, usually of the knees; may be palpable liver and spleen; may be mental deficiency; may be physical infantilism; may be dactylitis; positive Wassermann.

Lobar Pneumonia.—*Characteristics.*—The face is flushed, with a deeper tint on one cheek, and the alæ of the nose dilate with each inspiration; the breathing is hurried and often accompanied by an expiratory grunt; herpes is usually present on the lips or nose; the eyes are bright, the pupils often unequal; the expression is anxious.

Chief Signs.—Abrupt onset with chill and fever; pain in the side; short, dry, painful cough; increased respirations; later, blood-tinged tenacious sputum; pulse-respiration ratio disturbed; physical examination, revealing lobar consolidation;

crisis between the third and twelfth day, often the fifth or seventh; leukocytosis.

Acute General Peritonitis.—*Characteristics.*—The expression is one of extreme anxiety. The teeth are uncovered by the raising of the upper lip, and the countenance suggestive of extreme pain and disquiet.

Chief Signs.—Rigor; intense abdominal pain; habitus (the patient lies on his back with the thighs drawn up and the shoulders elevated); superficial respiration; abdominal tenderness and rigidity; tympanites; pulse rapid, small, hard; fever; vomiting.

Exophthalmic Goiter.—*Characteristics.*—The expression is one of wide-eyed staring. The eyeballs protrude, retraction of the lids causing exposure of the sclera above and below the cornea. The patient winks less frequently than in health, and there is a marked tremor of the lids. The picture is one of excitation.

Chief Signs.—Onset gradual; occurrence usually in females (ten to one); enlargement of the thyroid; tachycardia and circulatory disturbances; exophthalmos; tremors; nervousness; sweating; headache; wasting; anemia; may be toxic crises; increased basal metabolic rate.

Chronic Pulmonary Tuberculosis (Phthisis).—*Characteristics.*—In advanced cases the facies is unmistakable. The wide-open appealing eyes with white sclerotics, the emaciated face, the general pallor with red spots over the malar bones, the dilating alæ and panting respiration give the impression of a fugitive.

Chief Signs.—See page 31.

Cirrhosis of the Liver (Alcoholic).—*Characteristics.*—Later in the disease the facies is unmistakable. The patient is thin, the eyes are sunken, the conjunctivæ watery, the nose and cheeks show distended venules, and the complexion is muddy or icteroid.

Chief Signs.—See page 34.

Tetanus.—*Characteristics.*—The characteristic facies is the so-called risus sardonicus.

Chief Signs.—See page 44.

Leprosy.—*Characteristics.*—The face may be distorted and leonine in appearance due to thickened ridges of skin. The expression is somber.

Chief Signs.—Nodules; anesthetic areas; ulcerations; histological examination.

Neurosis ("Neurasthenia").—*Characteristics.*—The expression is habitually one of worry and anxiety.

Chief Signs.—Easy fatigability; headache; backache; insomnia; anxiety.

Neurosis ("Hysteria").—*Characteristics.*—A silly and vacuous but very amiable smile may greet the physician's introduction to the patient, or accompany the answer to every question asked. On the other hand, a peculiarly intense frowning may appear in response to every remark involving the patient's symptoms, the face clearing and smoothing when the subject is changed to one of outside interest. In the coma of hysteria the face is immovable, but with its natural coloring and a quivering resistance of the upper eyelid on any attempt to raise it.

Chief Signs.—Occurrence in females; morbid motor, sensory and psychic phenomena, such as paralysis without wasting of the muscles; characteristic convulsive seizures; anesthesia or hyperesthesia; special sense palsies; suggestibility and emotionalism.

Idiocy; Imbecility.—*Characteristics.*—The facies is dull, expressionless, unintelligent, “birdlike.”

Chief Signs.—Receding forehead and chin; small stature; absent or defective mental or special sense development (idiocy, mental development of three years, imbecility, seven years).

Dementia Præcox.—*Characteristics.*—The facies in the catatonic type is expressionless, the eyes closed, the whole picture being one of deep abstraction. In the hebephrenic type there is a silly and meaningless grin associated with lip movements.

Chief Signs.—Negativism; *flexibilitas cerea*; emotional or intellectual deterioration; stereotypy.

Dementia Senilis.—*Characteristics.*—The face is wrinkled and inelastic with a vacant expression.

Chief Signs.—Advanced age; gradual loss of memory, especially for recent events; periodic excitement; confusion; mental and emotional deterioration; physical deterioration.

Manic-Depressive Psychosis.—*Characteristics.*—The facies during the manic stage has an aggressive animated expression with heightened color.

Chief Signs.—Alternating periods of emotional depression and exaltation; psychomotor activity, flight of ideas, and distractibility during the manic stage; depression during the depressive stage.

General Paresis.—*Characteristics.*—The facies has a peculiar stability, and in speaking there are marked tremors of the lips and facial muscles.

Chief Signs.—History of syphilis; change of character; mental exaltation; tremors; Argyll-Robertson pupils; speech defects; altered reflexes; convulsive seizures; examination of the cerebrospinal fluid (increased globulin, increased lymphocytes, paretic curve in the colloidal gold reaction, positive Wassermann).

Paralysis Agitans (*Parkinson's Disease; Shaking Palsy*).—*Characteristics.*—The face is stiff as if starched, and the appearance is masklike. The eyelids are retracted and the eyeballs restless.

Chief Signs.—Middle age; general rigidity; progressive weakness; characteristic “pill-rolling” tremor of the hands; nodding head; festinating or propulsive gait.

Encephalitis Lethargica (*Parkinson's Syndrome*).—*Characteristics.*—The face is masklike as in paralysis agitans.

Chief Signs.—History of encephalitis lethargica; coarse tremor; general rigidity; increased reflexes; Moyer's sign; bent attitude; slowness of action; propulsive gait.

Cretinism.—*Characteristics.*—The head as compared to the body is relatively large. The face is broad, the lips and eyelids thick, the nose broad and flat, and the ears large and coarse. The mouth is usually open and expressionless, the tongue more or less constantly protruded, and the chin poorly developed.

Chief Signs.—Characteristics not noticeable until the sixth or seventh month; prognathic face; large tongue; short body; flat chest; pot belly; scanty hair; lack of sexual development; slow metabolism; mental defects; thyroid gland not palpable; delayed dentition.

Myxedema.—*Characteristics.*—The features are coarse and broad, the lips

thick, the nostrils broad and thick, and the mouth enlarged. Over the cheeks there is a reddish patch. The face is moon-shaped and expressionless; the hair of the head and eyebrows is scanty, coarse and dry.

Chief Signs.—Firm inelastic swelling of the skin which does not pit on pressure; slowness of thought and movement; low basal metabolic rate.

Acromegaly.—*Characteristics.*—The brow ridges are prominent and arched; the mastoid, zygomatic, malar, and nasal processes are hypertrophied, and the lower jaw greatly enlarged. The forehead is wrinkled and receding, the tongue large, fissured, and indented, and the lower teeth projecting and set wide apart.

Chief Signs.—Gradual enlargement of the bones of the face, hands, and feet, with thickening of the soft tissues; bitemporal hemianopsia; may be optic atrophy with increasing blindness; polyuria; glycosuria; x-ray of the sella turcica.

Chronic Internal Hydrocephalus (*Congenital Hydrocephalus*).—*Characteristics.*—The diagnosis is made by inspection. The head is large and spherical and the face comparatively small. The eyeballs protrude slightly and are rotated downward, leaving some of the sclera visible above.

Chief Signs.—History of gradual enlargement two or three months after birth; somnolence; lethargy; sharp cries (the hydrocephalic cry); headache; spasticities; contracted, sluggish pupils; impaired hearing; visible scalp veins; difficulty in raising the eyelids; less marked symptoms if the enlargement is gradual.

Mongolian Idiocy.—*Characteristics.*—The head is brachycephalic; the palpebral fissures slant obliquely inwards and downwards toward the broad, flat nose; the ears are large and pitcher-shaped; the lips are fissured and open, allowing the large, flabby, fissured tongue to protrude; the forehead is downy, the hair of the head scanty, wiry, and mouse-colored, and the complexion is florid and mottled.

Chief Signs.—Characteristics noticeable from birth; palpebral fissures oblique, upward and outward; strabismus; mottled complexion; tongue large and coarsely papillated, frequently protruded and drawn back; thyroid gland palpable; deferred closure of the fontanel; retarded puberty; delayed dentition; large hands and feet with incurving little finger; mentality of four years.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—In many cases there is a slight drooping of the upper eyelids with some wrinkling of the forehead, giving the face a sad expression. The contracted pupils, if present, give the eyes a steel-like look.

Chief Signs.—History of syphilis (six to fifteen years previous); lightning pains; absence of the knee-jerks; Argyll-Robertson pupils; Romberg's sign; later ataxic gait; sensory changes; trophic lesions; hypotonia; visceral crises; difficulty in micturition; optic atrophy; ocular palsies; positive Wassermann; spinal fluid examination (positive Wassermann, increased globulin, lymphocytosis, colloidal gold reaction with tabetic curve).

Facial Paralysis (*Bell's Palsy*).—*Characteristics.*—The muscles on one side of the face are completely paralyzed. The nasolabial fold is obliterated and in old-standing cases the angle of the mouth may hang down in a pouchlike fashion. All the wrinkles and furrows of the face on the paralyzed side are erased, in consequence of which it assumes an expressionless, masklike appearance. The patient is unable to frown or raise the eyebrows, close the eyelids, whistle or smile.

These features of the disease are best brought out by having the patient show his teeth, pucker his lips, or smile.

Chief Signs.—History of exposure to cold, injuries, blows, syphilis, otitis media; onset usually acute; loss of power on the affected side with paralysis of the lower motor neuron type.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—The facial expression is vacant or blank, but may be broken in upon by smiles and laughter aroused by trivial circumstances.

Chief Signs.—Onset between fifteen and thirty years; marked remissions in symptoms; spastic paraplegia; increased deep reflexes with Babinski's sign; absent abdominal reflexes; transient amblyopia or diplopia; disturbance of the sphincters; numbness and tingling; emotionalism; intention tremor; nystagmus; scanning speech; optic atrophy and pallor of the temporal half of the disks (ophthalmoscopy).

Bulbar Paralysis (*Glosso-labio-laryngeal Paralysis*).—*Characteristics.*—The facies has a vacant expression, and the mouth looks large, with drooping lips and drooling of saliva.

Chief Signs.—Gradual onset; difficulty in mastication and deglutition; indistinct articulation; inability to protrude the tongue into the cheeks; inability to pout the lips as in blowing and whistling; regurgitation of food into the nostrils.

Pseudobulbar Paralysis.—*Characteristics.*—The facies has an immobile, stupid expression, with the mouth continuously open.

Chief Signs.—History of hemiplegia, first on one side, then on the other; disturbances of phonation and deglutition; paralysis of the muscles of the cheeks, lips, tongue, palate, and mastication, with atrophy; apoplecticiform seizures; optic neuritis; spasmodic attacks of laughing or crying; mental defectiveness.

Amyotrophic Lateral Sclerosis.—*Characteristics.*—Bulbar paralysis not uncommonly occurs in the late stages, giving the facies described for that affection.

Chief Signs.—Occurrence in adults (twenty-five to forty years old); insidious onset; wasting and weakness in the upper limbs beginning in the small muscles of the hands; spasticity of the lower limbs and weakness without wasting; exaggerated deep reflexes (jaw-jerk, ankle-clonus, Babinski); diminished electrical excitability.

Myasthenia Gravis.—*Characteristics.*—There are two types of facies, one in which the patient can hardly keep the eyes open and whose chin tends to drop exhausted to the chest, and the other in which there is a characteristic smile which might be described as a unilateral sneer.

Chief Signs.—Normal muscular movement followed on repetition by rapid weakening and paresis; bilateral ptosis; strabismus and diplopia; may be coarse nystagmoid movements; mouth open; dribbling; weak mastication; may be nasal speech and regurgitation; may be dyspnea; myasthenic muscular reaction (quick loss of faradic stimulation); tendency to remissions.

Facioscapulohumeral Muscular Atrophy (*Landouzy-Déjerine Type*).—*Characteristics.*—The muscles of the face are wasted, the lips thickened and weakened. The lips cannot be firmly closed, so that the large mouth and wasted face give a peculiar expression to the face known as the "tapir mouth." The patient smiles with straight lips, causing the transverse smile ("rire en travers").

Chief Signs.—Often hereditary; onset in infancy, with weakness and wasting

of the muscles of the face; inability to close the eyes, to blow, or to whistle; later involvement of the muscles of the shoulders and upper arm, possibly the trunk, thighs and pelvis.

Progressive Lenticular Degeneration (*Wilson's Disease*).—*Characteristics*.—A characteristic facies develops late. The appearance is one of fixed emotion, any effort at conversation producing the expression of exaggerated mirth, which takes a long time to wear off.

Chief Signs.—Onset in youth; tremors; muscular weakness; spasmodic contractions; spasticity; contractures; emotional and mental changes; difficulty in articulation and swallowing; progressive course with emaciation.

Osteitis Deformans (*Paget's Disease*).—*Characteristics*.—When the cranium is enlarged the face and chin appear comparatively small; the face is triangular with the base upward. The head is held forward with the chin raised.

Chief Signs.—Onset in middle life; bending and bulging of the long bones forward with loss in height; gradual stooping with round shoulders; chest sunken toward the pelvis; abdomen pendulous; slow awkward gait; may be pain; x-ray (fuzzy outline and thickening of the skull; changes in other bones, especially the long bones and the pelvis).

Scleroderma.—*Characteristics*.—When the face is involved there is an absolute lack of expression, the features appearing to be ironed out.

Chief Signs.—Thickening (diffuse or circumscribed) of the skin, which is bound down to the underlying tissues; when involving the limbs, stiffness suggesting rheumatism; increase or decrease of pigment; surface dry and smooth.

Leontiasis Ossea.—*Characteristics*.—The face has a lionlike appearance.

Chief Signs.—Diffuse hypertrophy of the bones of the skull; hyperostosis; neuralgic symptoms from pressure.

Progeria.—*Characteristics*.—The face is that of a weazened old man with the head bald or covered sparsely with gray hair. The ear lobule is absent and the nasal cartilages conspicuous.

Chief Signs.—Occurrence in children; incomplete development; premature decay; dry skin; attitude of old age; general decrepitude; arteriosclerosis; early death.

Less Common Causes.—Mikulicz's disease (broadened cheeks with external ptosis); uncompensated mitral disease (anxious expression, puffy cyanotic complexion); ovarian disease (painful, pinched expression); syringomyelia (when bulbar paralysis develops); acute poliomyelitis (with bulbar paralysis); progressive muscular atrophy (with bulbar paralysis); chloroma (froglike); chorea.

RISUS SARDONICUS

(*The Sardonic Grin*)

Tetanus (*Lockjaw*).—*Characteristics*.—The typical risus sardonicus occurs in this disease. There is a fixed unmirthful grin due to tonic contraction of the facial muscles, drawing the angle of the mouth outward and raising the eyelids.

Chief Signs.—History of a puncture wound (eight to twelve days previous); stiffness of the neck; locking of the jaws (trismus); may be retraction of the head;

fever; convulsions and stiffening (opisthotonos, orthotonos) with rigidity between the paroxysms; duration not over seven to ten days; culture from the wound and the inoculation of mice.

Strychnin Poisoning.—*Characteristics.*—The grin is much like that of tetanus.

Chief Signs.—History of overdose or the taking of rat paste; jaw and neck not specially affected; tonic convulsions producing opisthotonos, induced by the slightest stimulus, and with complete relaxation between spasms; temperature normal; quick death or rapid subsidence of the symptoms.

Acute General Peritonitis.—*Characteristics.*—Sometimes the “hippocratic facies” seen in this condition may be mistaken for the risus sardonius.

Chief Signs.—See page 463.

Catalepsy.—*Characteristics.*—The facies is by no means always that of smiling, but if it should be, then the smile is a fixed one.

Chief Signs.—Chronicity; maintenance for hours at a stretch of some attitude that would rapidly fatigue an ordinary person; history and associated mental symptoms of melancholia or dementia.

Less Common Causes.—Abdominal carcinoma; inflammation of the diaphragm; facioscapulohumeral muscular paralysis (transverse smile); contraction of scars; scleroderma; spasms of the facial nerves; ulcerative enteritis; progressive lenticular degeneration; malingering; “hysteria.”

FACIAL SPASM, TWITCHING, GRIMACING

During general convulsions, convulsive twitchings of the face may occur (for causes of Convulsions, see page 684). Blepharospasm is a tonic persistent closure of the eye (for causes of Blepharospasm, see page 72).

Chorea (*Sydenham's Chorea*; *St. Vitus' Dance*).—*Characteristics.*—The face is continuously being twisted into grimaces. Twitching movements of one or more muscles may also be observed, and it is not uncommon for ticlike movements to develop out of an attack of chorea and persist for some time.

Chief Signs.—Occurrence between five and fifteen years (females 70 per cent); may be history of or association with acute rheumatic arthritis, acute endocarditis, tonsillitis; irregular, involuntary, purposeless, spasmodic movements of the hands, face, legs, the whole body or half the body, ceasing during sleep; jerky speech; may be fever; may be aphasia; dullness and irritability; may be cardiac involvement; may be subcutaneous nodules; duration rarely over two months; relapses and recurrences common.

Habit Spasm (*Tic*; *Habit Chorea*).—*Characteristics.*—Facial tics are seen in blinking of the eyelids or brows, smiling, grimacing, mimicry, winking, tonic closure of the eyelids, and smacking movements of the lips. Tics of the jaws are observed in teeth grinding, abnormal movements of the lower jaw, biting the lips, and trismus.

Chief Signs.—Occurrence at any age after five years, most commonly beginning in youth; evidence of exaggerated nervousness; may be neuropathic heredity, or eccentricity; may be history of mimicry or brain fag; history of gradual development; chronicity.

Reflex Spasm.—*Characteristics.*—A reflex spasm, unlike a tic, begins locally, perhaps in a single muscle, and spreads to adjacent muscles. When the exciting stimulus is unilateral, the reflex spasm is unilateral also, but not invariably so. During a paroxysm, the face, usually on one side, is thrown into strong tonic contraction, the eye is closed and the mouth drawn up. Sometimes a reflex spasm may persist as a habit spasm long after the original cause has passed away.

Chief Signs.—Existence of a source of peripheral irritation in the distribution of the fifth nerve (conjunctival irritation, tic douloureux, decayed or non-erupted teeth, nasal polypus, lesion of the facial nerve).

Epilepsy.—*Characteristics.*—Twitching of the facial muscles may precede an attack. During the clonic stage of the attack twitching commences and involves the face, body, and limbs, mainly on one side.

Chief Signs.—Onset before twenty years of age (75 per cent), commonly in infancy, puberty, and second dentition; may be aura (sensory, visceral, sensorial, psychic); loss of consciousness, suddenly with a cry; convulsions first tonic with rigidity, head retraction or rotation; second, clonic progressing to violent convulsions with biting of the tongue and frothing (duration one to two minutes); coma with gradual return to consciousness, then sleep.

Exophthalmic Goiter.—*Characteristics.*—A clonic spasm of the levator palpebræ superioris, resulting in successive liftings of the upper eyelids (Abadie's sign) is an occasional symptom.

Chief Signs.—See page 40.

Trigeminal Neuralgia (*Tic Douloureux*).—*Characteristics.*—During a paroxysm of pain, the face on the side of the pain is thrown into strong contractions, the eye is closed and the mouth is drawn up on the affected side, and the patient often presses his hand desperately over the site of the pain. This is not a tic but a reflex spasm (see above).

Chief Signs.—See page 31.

Uremia.—*Characteristics.*—During the unconscious period of uremia, twitchings, particularly of the face and hands, may occur.

Chief Signs.—History of renal disease; mental dullness and apathy; severe headache and giddiness; paroxysmal dyspnea; vomiting; polyuria; albuminuria; cylindruria; hematuria; high blood urea (blood chemistry); albuminuric retinitis (ophthalmoscopy).

Facial Paralysis.—*Characteristics.*—Facial hemispasm may follow an attack of ordinary facial palsy, less commonly it may precede its onset. This is a special type of reflex spasm (see above). The spasm is generally tonic and sometimes permanent (contracture).

For causes of Facial Paralysis, see page 47.

Chronic Progressive Chorea (*Huntington's Chorea*).—*Characteristics.*—Grimaces of the face, accompanied by gesticulations, are common. The movements commence in the face and hands.

Chief Signs.—Onset between thirty and forty; hereditary tendency; gradual onset; movements as in chorea but slower and with marked incoördination, in the early stage controlled by the will, later severe and universal; speech difficult owing to tongue spasm; lurching gait; progressive tendency toward dementia.

Dementia Præcox (*Hebephrenic Type*).—*Characteristics.*—A silly and mean-

ingless grimace or grin, associated with movements of the lips, is a symptom often seen.

Chief Signs.—See page 41.

Less Common Causes.—"Hysteria"; meningitis; dentition; caries; polypus; paramyotonia congenita; aneurysm of the vertebral artery (pressing on the facial nerve); Friedreich's ataxia; Giles de la Tourette's disease (spasmodic tic with echolalia); chronic tortion spasm; malingering; hereditary cerebellar ataxia; hydrocephalus; psychosis.

FACIAL PARALYSIS

Facial paralysis is almost always unilateral, very rarely bilateral. It is due to many causes and presents special characteristics dependent on the portion of the seventh cranial nerve affected. The characteristics, however, of the facial paralysis are more or less constant in all forms. The affected side of the face has a smooth, expressionless appearance, due to obliteration of the natural wrinkles; the mouth is drawn to the sound side; there is inability to pucker the lips as in whistling, and the labials are poorly enunciated. If the paralysis is of peripheral origin, the eye cannot be completely closed and the forehead cannot be wrinkled, while the tongue, though actually unaffected, is apparently deviated when protruded, due to the pulling of the mouth to the sound side. If the paralysis is of central origin the power of closing the eye and wrinkling the forehead is largely retained, and the tongue actually deviates toward the sound side. To detect these facts the patient is requested to close the eyes tightly and to raise the upper lip so as to expose the teeth, or to attempt to whistle. The various sites at which the nerve may be affected are supranuclear, nuclear, and infranuclear, and in the latter either in the pons, at the base of the brain, within the temporal bone, or in the peripheral distribution. If the lesion is supranuclear (cortex, corona radiata, internal capsule, upper portion of the pons), the upper branch is unaffected (the frontalis, orbicularis oculi, and corrugator escaping), hemiplegia is usually present, and the paralysis is of the upper motor neuron type. If the lesion is nuclear, other nuclei are also usually affected, the upper fibers generally escape, and the paralysis is of the lower motor neuron type. If the lesion is infranuclear and in the lower portion of the pons there is usually crossed paralysis, the nucleus of the sixth nerve is almost always affected (conjugate deviation away from the lesion), and often also the fifth nerve; if at the base of the brain, the eighth nerve is usually affected, causing deafness; if within the temporal bone, taste is usually lost in the anterior two-thirds of the tongue and there may be hypersensitiveness to musical tones; and if in the peripheral nerve, the effect is only that of paralysis of the facial muscles supplied by the nerve.

Bell's Palsy (*Rheumatic Facial Paralysis*).—*Characteristics.*—The paralysis is of the peripheral type (lower motor neuron type). The eye cannot be closed, and in attempting closure the eyeball turns up and inwards. The forehead cannot be wrinkled. In showing the teeth the lips are not separated on the sound side. In smiling the affected side is unresponsive. Whistling is impossible.

Chief Signs.—Sudden onset; recovery usual and may be complete.

Trauma.—*Characteristics.*—Facial paralysis of the peripheral type may follow

injuries or blows close to the stylomastoid foramen, operations on tumors, forceps at birth, and occasional mastoid operations. The palsy is as described for the rheumatic type, except that after mastoid operations it may be similar to that of otitis media (see below).

Chief Signs.—May be permanent with resulting contracture.

Otitis Media (*With Temporal Caries*).—*Characteristics.*—Facial paralysis may occur due to involvement of the nerve in the aqueduct of Fallopius. There may be in addition to the features described under Bell's palsy, loss of taste in the anterior two-thirds of the tongue, hyperacusis, and deficiency in salivary secretion on the same side.

Chief Signs.—Chronic foul-smelling, bloody and purulent aural discharge; any degree of deafness; tinnitus; may be pain; may be vertigo; otoscopy (revealing the pus coming from the perforated drumhead); probing (revealing the necrosis of the ossicles and tympanic walls).

Cerebral Syphilis.—*Characteristics.*—Facial paralysis is not as common as palsies of the second, third, and sixth nerves. It is usually accompanied by deafness, due to associated involvement of the eighth nerve. Other cranial nerve paralyse also usually coexist. The facial palsy is of the peripheral type.

Chief Signs.—See page 9.

Apoplexy (*Cerebral Hemorrhage*).—*Characteristics.*—The hemiplegia of apoplexy is usually accompanied by partial facial paralysis on the same side. The frontalis, orbicularis oculi, and corrugator are unaffected. The paralysis is of the upper motor neuron type, and the tongue and palate are also affected. If conjugate deviation is present the head and eyes are turned toward the side of the lesion except in the early spasm. The face may recover rapidly.

Chief Signs.—See page 91.

Cerebral Thrombosis (*Softening*).—*Characteristics.*—As in apoplexy.

Chief Signs.—See page 315.

Cerebral Embolism.—*Characteristics.*—As in apoplexy. *

Chief Signs.—See page 315.

Cerebral Tumor.—*Characteristics.*—The presence of facial paralysis depends naturally upon the situation of the tumor. If it is located in the lower third of the motor area there is facial paralysis of the supranuclear type on the side opposite the lesion; the frontalis, orbicularis oculi, and the corrugator escape and the tongue actually deviates toward the sound side. If it is in the pons, there is usually "crossed" paralysis: facial paralysis on the side of the tumor, conjugate deviation to the opposite side, and hemiplegia of the limbs on the opposite side; or there may also be nuclear palsy of the sixth nerve on the same side as the facial paralysis (Millard-Gubler syndrome). When the lesion is in the crus there is third nerve palsy on one side with hemiplegia of the opposite face, arm and leg, usually most marked in the face (syndrome of Weber). In cerebellar-pontine tumors there is usually slight facial paralysis on the side of the tumor, associated with deafness and tinnitus. The seventh nerve may also be involved by extension in tumors arising from the base of the middle fossa of the skull, associated with deafness and ocular nerve palsies.

Chief Signs.—See page 10.

Tuberculous Meningitis (*Basal Meningitis*).—*Characteristics.*—Of the cranial

nerves involved, the third and seventh are most common. Taste is usually not affected. Weber's syndrome may occur, *viz.*, third nerve palsy on one side and hemiplegia of the face, arm, and leg on the opposite.

Chief Signs.—See page 10.

Encephalitis Lethargica (*Epidemic Encephalitis*).—*Characteristics.*—Facial paralysis of the lower motor neuron type may occur, but usually in association with oculomotor nerve palsy, the latter being more common.

Chief Signs.—See page 41.

Facioscapulohumeral Muscular Paralysis (*Landouzy-Déjerine Type*).—*Characteristics.*—There is bilateral facial paralysis, the facial muscles being earliest affected. The eyes cannot be closed, blowing and whistling are impossible, the lips are everted, and the patient smiles with straight lips (the transverse smile or “rire en travers”). The electrical reactions diminish in general with the wasting, but there is no reaction of degeneration.

Chief Signs.—See page 43.

Less Common Causes.—Tumor of the parotid gland; tumor of the face; cervical adenopathy; acute poliomyelitis; diphtheria; tetanus; “hysteria”; tabes dorsalis; multiple neuritis; multiple sclerosis; acute ascending paralysis; infantile hemiplegia; gumma of the brain; cerebrospinal meningitis; bulbar paralysis; fracture of the skull.

FLAPPING OF THE CHEEKS DURING BREATHING

In most forms of coma the cheeks are lax and puff outward with each respiration (for causes of Coma, see page 675). The same thing is seen in toothless elderly persons during sleep.

Apoplexy (*Cerebral Hemorrhage*).—*Characteristics.*—During the stage of coma the cheeks are blown out with each respiration, accompanied by sputtering of the lips.

Chief Signs.—See page 91.

Facial Paralysis.—*Characteristics.*—The cheek of the affected side may flap with respiration when the patient is asleep, emphasizing the flabbiness of the paralyzed muscles.

For causes of Facial Paralysis, see page 47.

GENERAL SWELLING OF THE FACE

(See also “Thickened Features,” page 51.)

Acute Parenchymatous Nephritis (*Acute Glomerulonephritis; Acute Bright's Disease*).—*Characteristics.*—Puffiness of the eyes and face, and of the ankles, is present at the onset. Later as anasarca develops, the whole body, including the face, is markedly edematous, and the tissues pit on pressure.

Chief Signs.—Onset rapid or insidious; headache; nausea and vomiting; fever; complexion pasty; skin dry; tongue furred; urine scanty; anemia; general edema; may be increased blood-pressure; urinalysis (deep or smoky colored, specific gravity 1.025 to 1.035, large amount of albumin, blood cells, casts of all kinds, much debris); may be albuminuric retinitis (ophthalmoscopy).

Chronic Parenchymatous Nephritis (*Chronic Glomerulonephritis; Chronic Bright's Disease*).—*Characteristics*.—Edema is early, marked, and obstinate, and is earliest in the face and feet. The eyelids are puffy, especially in the morning. The edema may be general; the tissues pit on pressure.

Chief Signs.—Edema (beginning in the face); nausea and vomiting; increased arterial tension with accentuation of the second aortic sound; diminution in the output of urine; albuminuria, cylindruria, hematuria; albuminuric retinitis (ophthalmoscopy); lowered kidney function (phenolphthalein test); high blood urea (blood chemistry).

Nephrosis.—*Characteristics*.—The edema is general, involving the face. It may persist for months or even years.

Chief Signs.—Presence of a septic focus; general edema; blood-pressure not increased; absence of anemia; absence of nitrogen retention; urinalysis (marked albumin, casts).

Trichiniasis.—*Characteristics*.—Edema is an important sign. There is early transient edema of the face and eyelids about the eighth day. In the fourth or fifth week the edema is often extreme, involving the face, limbs, and entire body, though the genitals may escape.

Chief Signs.—History of eating pork and of others affected; onset with abdominal pain, vomiting, and often diarrhea; fever of remittent or intermittent type (seventh to fourteenth day); muscles swollen, hard, and tender; cough and dyspnea; aphonia; emaciation, anemia; eosinophilia and leukocytosis; duration two to eight weeks; examination of suspected food for larvæ of trichina; examination of feces for the parasites; biopsy.

Measles (*Morbilli; Rubella*).—*Characteristics*.—The face is much swollen, especially about the eyes when the full eruption has developed, and the features are sometimes scarcely recognizable.

Chief Signs.—See page 770.

Smallpox (*Variola*).—*Characteristics*.—The skin of the face is markedly swollen, sufficient to close the eyes when the lesions are confluent.

Chief Signs.—See page 770.

Sunburn.—*Characteristics*.—The face may be swollen, red, painful, and hot.

Chief Signs.—History of exposure to the sun; fever.

Eczema.—*Characteristics*.—The skin of the face is often much swollen.

Chief Signs.—See page 57.

Acute Alcoholism.—*Characteristics*.—Puffiness of the face is noted when the dissipator awakes after his spree.

Chief Signs.—See page 37.

Whooping-Cough (*Pertussis*).—*Characteristics*.—The face is often bloated from the constant congestion, and is most marked about the eyes.

Chief Signs.—See page 358.

Mediastinal Tumor.—*Characteristics*.—The face, upper part of the thorax, and the arms may occasionally become swollen, edematous and cyanosed, as a result of pressure on the superior vena cava.

Chief Signs.—Insidious onset; dyspnea, often severe, and with paroxysms; cough, often severe and with paroxysms (may be brassy); may be chest pain radiating to the arms; cyanosis; dysphagia; weakness or hoarseness of the voice;

sitting posture with the head thrown back; immobility or bulging of the affected side; distended veins of the chest, neck, and arms, often unilateral; diminished tactile fremitus, breath sounds and vocal resonance, with dullness over the mediastinum; may be sternal pulsation, not expansile); may be pleural effusion; x-ray (showing an abnormal pulsating but not expansile mass in the mediastinum).

Aneurysm of the Arch of the Aorta.—*Characteristics.*—If compression occurs suddenly, it gives rise to varying degrees of edema of the head, face, neck, and arms, and cyanosis of the face. When the compression is exerted gradually, as it usually is, the collateral veins assume the burden and obliterate these symptoms.

Chief Signs.—May be history of syphilis; pain (mild to anginoid); brassy cough, often paroxysmal; hoarseness or aphonia; may be slight hemoptysis; dyspnea, often paroxysmal; may be dysphagia; palpable or visible pulsation (expansile); inequality of the pupils; inequality of the pulses; tracheal tugging; dilated veins; increased area of dullness; diastolic shock and sound over the sac; systolic thrill and murmur over the sac; x-ray (expansile tumor).

Less Common Causes.—Hodgkin's disease; pericarditis with effusion; Ludwig's angina; thrombosis of the superior vena cava; subcutaneous emphysema; exophthalmic goiter; pneumothorax; dengue; chronic drug intoxication; trypanosomiasis; scurvy; serum-sickness; tuberculosis of the bronchial glands; chlorosis; cerebral thrombosis.

THICKENED FEATURES

(The skin of the face is thickened and does not pit on pressure.)

Myxedema.—*Characteristics.*—The skin is swollen, firm, and inelastic, not pitting on pressure. The surface is dry and rough.

Chief Signs.—Increase in body bulk; features coarse and broad, lips thick, nostrils broad and thick, mouth enlarged, expression dull, hair scanty and coarse; slowness of thought and movement; low basal metabolic rate.

Cretinism.—*Characteristics.*—The face is broad and puffy, and the eyelids swollen, the effect being one of edema, which, however, does not pit on pressure.

Chief Signs.—Characteristic facies (see page 41); dry skin; delayed dentition; short body, flat chest, pot belly; scanty hair; lack of sexual development; slow metabolism; mental defectiveness; improvement with thyroid therapy.

Acromegaly.—*Characteristics.*—Besides the changes in the bony structure of the face, the skin and soft tissues become thickened, especially the nose, eyelids, tongue, and ears.

Chief Signs.—Tall stature; enlarged feet and hands; face elongated and enlarged, especially the lower jaw, brows, malar bones, and zygoma; thick, dry, loose, wrinkled skin; heavy growth of hair; enlargement of the tongue with difficulty of speech; cerebral symptoms (headache, dullness, optic neuritis); bitemporal hemianopsia; x-ray of skull (enlarged sella turcica, enlarged frontal sinus, irregular thickness of the calvarium, enlarged external occipital protuberances).

Leprosy (Nodular or Tubercular).—*Characteristics.*—In the first stage there are attacks of fever, with swelling and patchy erythema of the face, several attacks occurring yearly for one or two years. In the second stage the patches swell and become infiltrated and hyperesthetic. The tubercles begin in the patches as papules

which multiply and grow, coalesce, and form the typical flat masses of leprotic tissues which become anesthetic. When fully developed, the natural lines of the face are obliterated and replaced by creases between masses of growth.

Chief Signs.—Occurrence or history of residence in the tropics; chronicity; febrile attacks with malaise; development of nodular masses which become anesthetic, on the face (especially on the lobes of the ears), then forearm, limbs, thighs, buttocks; involvement of the mucous membranes early (especially nasal); nasal discharge; loss of facial hair; hoarse voice; tongue infiltrated and ulcerated; conjunctivitis and keratitis; ulceration of the masses; exacerbations; presence of bacilli in the nasal secretion; biopsy; may be positive Wassermann.

Scleroderma.—*Characteristics.*—The face and upper body may be affected or at times the whole body. A brawny induration of the skin gradually develops, the surface becoming glossy, dry, and smooth.

Chief Signs.—Premonitory pruritus; pain in the muscles and articulations; the tissues become thickened, hard, and appear edematous; skin cold, whitish or bronzed, and apparently glued to the skeleton; fingers and toes thin, stiff or hooked; variable pigmentation; cyanosis of the hands or legs.

Sclerema Neonatorum.—*Characteristics.*—The skin is indurated, especially in regions where adipose tissue is abundant.

Chief Signs.—Occurrence in feeble infants, usually in the first few days; subnormal temperature; fatal termination.

INEQUALITY IN THE TWO SIDES OF THE FACE

Progressive Facial Hemiatrophy.—*Characteristics.*—The face presents an appearance as though it were composed of two lateral halves of different individuals, with the vertical line of junction sharply defined; and the hair of the smaller side is thin, white or absent, the eyes sunken and the skin altered in texture.

Chief Signs.—Insidious onset in childhood (commonly females); slow progress, beginning as a local wasting and gradually extending; unilateral atrophy of the skin, fat, subcutaneous tissues, and bones; may be falling out of the teeth on the affected side; may be hemiatrophy of the tongue; no effect on the facial muscles; no sensory or electrical changes.

Facial Paralysis.—*Characteristics.*—In long-standing cases facial asymmetry is present. The affected side, however, is often mistaken for the sound side due to the fact that postparalytic contracture emphasizes the folds and lines on the affected side. An attempt to close the eye, however, is imperfectly carried out, and the angle of the mouth is strongly retracted at the same time. On asking the patient to show his teeth, he can only do so with an effort, and but slowly, while the eye is almost closed on the same side. The reaction of degeneration is present.

For causes of Facial Paralysis, see page 47.

Congenital Torticollis.—*Characteristics.*—The face on the affected side may not develop as rapidly as on the sound side.

Chief Signs.—Deformity present from birth; head turned toward the sound side with the chin uptilted; compensatory lateral curve of the cervical spine with the concavity toward the affected side.

Less Common Causes.—Congenital asymmetry; facial hemihypertrophy; infantile paralysis (long-standing); infantile hemiplegia; paralysis of the cervical sympathetic; acquired torticollis (long-standing).

LOCAL SWELLINGS OF THE FACE

(See also "Swellings on the Head," page 17; "Swellings of the Nose," page 158; "Swellings of the Jaw," page 235; and "Skin Affections of the Face," page 56.)

Abscess and Furuncle.—*Characteristics.*—In furuncle a small red papule forms, which increases in size, becomes more painful and forms a conical elevation, deep red in color and very tender. It may subside, but, as a rule, the swelling increases, the color becomes more dusky, and a pustule forms which ruptures, exposing a "core" or slough. In abscess the inflamed area is larger than in furuncle or boil, the swelling is greater, edema is more marked, and there is more or less widespread heat, redness, and throbbing pain. As the abscess matures, signs of fluctuation become manifest, "pointing" occurs, and spontaneous evacuation of pus follows.

Alveolar Abscess (*Dental Abscess; "Gum Boil"*).—*Characteristics.*—The starting point of a dental abscess is a carious spot about the fang of a tooth, and the swelling at first is in the gum. But as the suppurative process extends the side of the face over the affected area often becomes visibly swollen.

Chief Signs.—Signs of local inflammation about the affected tooth; throbbing or even distracting pain at first; tenderness on percussion of the affected tooth and on pressure over the swollen gum; x-ray.

Insect Bites and Stings.—*Characteristics.*—The stings of bees, wasps, hornets, and yellowjackets cause considerable swelling and pain, the bites of flies, fleas, gnats, and bedbugs less so. Ticks produce considerable local irritation (cellulitis). Spiders, tarantulas, and scorpions may cause great swelling and even constitutional symptoms. Usually there will be a history of exposure to guide the diagnosis.

Milium.—*Characteristics.*—It is usually observed about the face, and consists of a collection of small, round, pearly elevations, which vary in size from a pin-head to a millet seed. The contents cannot be squeezed out until an opening is made, thus differing from comedo.

Maxillary Antritis.—*Characteristics.*—In acute empyema of the antrum, close observation will occasionally demonstrate swelling over the upper jaw of the affected side with some heat and tenderness.

Chief Signs.—Pain in the teeth, or upper jaw, radiating over the side of the head; tenderness elicited by pressure over the canine fossa and exit of the infra-orbital nerve; feeling of elongation of the teeth with tenderness on tapping with a tongue depressor; painful mastication; may be lachrymation and photophobia; periodic discharge of pus from the nostril after the acute stage; transillumination, revealing opacity; rhinoscopy with catheterization of the sinus; x-ray.

Erysipelas.—*Characteristics.*—There is a bright red, shiny swelling usually beginning in the neighborhood of the nose, which spreads upward and laterally. It is swollen and tense, and frequently ends in a sharply defined ridge. The surface of the inflamed patch is at first smooth and glazed, but later is covered

with minute vesicles or blebs. There is burning and tingling and the parts may become so edematous that the features are scarcely recognizable.

Chief Signs.—May or may not be history of a wound; rigor; fever; swollen lymph-nodes; gradual subsidence beginning in four or five days, with eventual desquamation in ten to fourteen days.

Mumps (*Epidemic Parotitis*).—**Characteristics.**—The child complains of pain just below the ear on one side, where a slight swelling is noticed, which increases gradually, and within forty-eight hours there is great enlargement of the neck and the swelling extends into the side of the cheek. The swelling passes forward in front of the ear, the lobe of which is lifted, and back beneath the sternomastoid muscle. The other side usually becomes affected in a day or two.

Chief Signs.—Pain under the ear, increased by opening the mouth, swallowing, and taking acids; fever; swelling of the parotid gland; stiffness of the jaws; diminished saliva; epidemicity.

Comedo ("Blackhead").—**Characteristics.**—Small, blackish, sunken or slightly raised masses occur in the skin of the face at the orifices of the sebaceous glands.

Chief Signs.—Expression on pressure of a lump or wormlike mass of sebaceous material.

Mole.—**Characteristics.**—There is a circumscribed elevation (hypertrophy of the skin), usually pigmented, and covered with hair. The surface may be papillary, or infiltrated with fat. It may undergo malignant degeneration. Moles are usually congenital, especially the pigmented variety, though hairless, white moles may be acquired.

Urticaria (*Hives*).—**Characteristics.**—There is a sudden appearance of firm, rounded, pinkish or whitish elevations, surrounded by red areolæ (wheals), which last a few hours and are succeeded by new ones in other places. Itching is intense.

Chief Signs.—See page 731.

Simple Nevus (*Hemangioma Telangiectaticum*; "Port Wine Mark"; "Birth-Mark")—**Characteristics.**—These are slightly elevated, bright or dusky-red tumors, usually located in the face or neck, and are commonly congenital.

Sebaceous Cyst (*Wen*).—**Characteristics.**—There is a rounded swelling, usually firm but elastic, freely movable on the deeper tissues unless inflamed, and invariably attached to the skin at one point. They are much less common on the face than upon the scalp.

Chief Signs.—See page 17.

Papilloma (*Wart*; *Verruca*).—**Characteristics.**—The only wart commonly observed upon the face is verruca filiformis, which is a threadlike overgrowth derived from the cutaneous papillæ.

Epithelioma (*Prickle-Cell Cancer*).—**Characteristics.**—This is more common on the lip. The fully developed lesion is characteristic. For full description see under "Skin Affections of the Face," page 56.

Rodent Ulcer (*Basal-Cell Cancer*).—**Characteristics.**—This begins and continues for a long time as a papule. For complete description see under "Skin Affections of the Face," page 56.

Parotid Tumor.—**Characteristics.**—These are usually "mixed tumors." The retromaxillary fossa is soon filled up, and the side of the cheek and mastoid regions are invaded. They are usually lobulated and hard, but if myxomatous

elements predominate, they may present soft areas. The growth spreads forward beneath the masseters, and downward into the neck.

Simple Parotid Cyst.—*Characteristics.*—A swelling occurs in the cheek, usually at or near the point of opening of Steno's duct into the buccal cavity. It can be felt as a tense, somewhat fluctuating swelling embedded in the tissues of the cheek.

Sarcoma of the Jaw.—*Characteristics.*—In the central sarcoma which grows from cells of the fetal marrow and is of more frequent occurrence in childhood and early life, the growth is rapid but lacks the characteristics of malignancy. The mucous membrane in the mouth covering the growth is brownish-purple and may ulcerate. The swelling when palpated gives rise to a characteristic "egg-shell crackling." The peripheral type of sarcoma growing from the periosteum knows no limits and in its growth may fill the antrum and involve the cheek, mouth, and orbit. It grows rapidly and fungates. The local symptoms which ensue depend upon the parts invaded. X-ray will reveal its nature.

Odontoma.—*Characteristics.*—A fibrous tumor (usually odontoma) of the upper jaw may slowly bulge on to the cheek, attaining, if left undisturbed, an enormous size. They are very hard.

Chief Signs.—See page 201.

Dental Cyst.—*Characteristics.*—There is a slowly developing swelling by the side of the root of a carious tooth which may enlarge and be visible and palpable in the cheek over the alveolus. The skin is freely movable over it and there is absence of any local inflammatory reaction or tenderness. It may crackle slightly when palpated. X-ray will discover its nature.

Dermoid Cyst.—*Characteristics.*—In the face the most common situation is just behind the external angular process of the frontal bone, but it may be encountered at the inner angle of the orbit, or in front of, or behind the ear. The swelling is semiglobular in shape and not movable with the skin (differing from sebaceous cyst), the base being invariably attached to deeper structures. They occur in infancy (rare for sebaceous cyst), childhood, and adult life.

Angioneurotic Edema.—*Characteristics.*—Edema appears suddenly and is circumscribed. The face, together with the hands and genitalia, are the parts most frequently affected. On the face it may involve the eyelid, lips, or cheek.

Chief Signs.—Sudden appearance of the swelling; hereditary history; itching, heat, redness, or urticaria preceding the attack; gastro-intestinal disturbance (colic, pain, nausea, vomiting) accompanying the attack; occasional cardialgia and hemoglobinuria; may be nervous manifestations; transient duration; recurrence of the edema in different parts.

Emphysema of the Cheek.—*Characteristics.*—There is a swelling in the connective tissue of the cheek which is soft and doughy, and fine cracklings may be recognized under gentle pressure of the finger.

Chief Signs.—History of fracture of the antrum, frontal sinus, or nose; increase of the emphysema on coughing, sneezing, or vigorous blowing of the nose.

Anthrax (Malignant Pustule).—*Characteristics.*—At the site of inoculation, usually on an exposed surface, of which the face is a predilection site (others being the hands and arms), a papule forms which soon becomes vesicular. Brawny

induration may be extreme and the concomitant edema produces great swelling of the part.

Chief Signs.—Occupation (usually workers in wool, hides, and animals); may be similar lesions on other sites, especially on the hands or arms; swelling of neighboring lymph glands; bacteriological examination of the pus (showing anthrax bacilli).

Actinomycosis.—*Characteristics.*—The jaw has been affected in a number of cases in man. The patient comes under observation with swelling of one side of the face, or with a chronic enlargement of the jaw which may simulate sarcoma.

Chief Signs.—Examination of the pus, revealing the ray fungus.

Less Common Causes.—Acromegaly (prominent cheek bones constitute protuberances which are striking); snake bite (great swelling and ecchymosis); lipoma; fibrolipoma; angioma; multilocular cyst of the jaw; enchondroma of the jaw; leontiasis ossea; parotid abscess; acute glanders (great swelling of the nose); cavernous sinus thrombosis (swelling about the eye particularly); dacryocystitis (swelling near the inner canthus); scurvy; exophthalmic goiter; thrombosis of the superior longitudinal sinus.

ULCERS OF THE FACE

(See also "Skin Affections of the Face," page 56.)

Lupus Vulgaris

See page 59.

Rodent Ulcer (*Basal-Cell Cancer*)

See page 59.

Epithelioma (*Prickle-Cell Cancer*)

See page 58.

Syphilis (*Late Secondary and Tertiary*).—*Characteristics.*—Cutaneous lesions on the face, as elsewhere, are prone to ulceration. The whole structure of the skin is involved, the ulceration is deep, and the ulcers, while healing in the center, are prone to extend at the margins, and so assume the characteristic circinate or serpiginous form. When single they are round, punched out, and frequently covered with crusts. When a serpiginous sore is formed by coalescence of several ulcers, there is usually poured forth a thick yellowish discharge.

Chief Signs.—History of syphilis; scars of earlier syphilitic lesions; positive Wassermann; improvement by specific therapy (mercury, iodid, salvarsan).

Less Common Causes.—Dehli boil (tropical sore); glanders; blastomycosis; scrofula.

SKIN AFFECTIONS OF THE FACE

Freckles (*Lentigo*).—*Characteristics.*—Pigment deposits are present in the form of small, irregularly shaped, brownish macules.

Acne Vulgaris.—*Characteristics.*—An aggregation of small papules, pustules, and comedones is present, most marked on the forehead and temples, on the maxillary portions of the cheeks and on the chin. The pustules usually rupture spontaneously without crust formation. Scarring may follow.

Chief Signs.—Onset about the time of puberty; involvement of the sebaceous glands; chronicity.

Impetigo Contagiosa.—*Characteristics.*—The eruption appears in crops, first as vesicles which grow and are soon converted into flat, slightly umbilicated pustules varying in size from a pea to a large walnut. In a few days the blebs dry up and form thin, yellowish, lamellated crusts that, separating, leave a slightly excoriated surface. There is rarely any inflammation.

Chief Signs.—Occurrence commonly in children; infectious tendency.

Eczema.—*Characteristics.*—The vesicular form is common upon the faces of infants, and around the ears of both children and adults; small vesicles develop upon an erythematous patch, become confluent and rupture with the formation of a mass of thick yellowish crusts, beneath which the exudation continues. The pustular or impetiginous type is common around the ears and upon the faces of poorly nourished children; the discharge is purulent rather than serous. The erythematous type is more common upon the faces of adults, commencing as ill-defined, reddish blotches that are covered by furfuraceous scales.

Chief Signs.—Intense itching; tendency to recur.

Keratosis Senilis.—*Characteristics.*—Flat, moderately adherent crusts, yellowish-brown or black in color, may appear on the face of persons past middle life. When forcibly removed they show on their under surface horny prolongations. The surface of the skin is uneven, bleeds easily, is moist and red, and at times superficially ulcerated. These warts may develop into epitheliomata.

Sycosis Parasitica (*Tinea Barbae*, *Barber's Itch*).—*Characteristics.*—The disease begins as a red, scaly patch involving the bearded regions. Soon purplish nodules and pustules form around the openings of the hair follicles, and the hairs become lusterless, brittle, and loose. There may be considerable itching.

Chief Signs.—Occurrence in men who frequent barber shops; chronicity; demonstration of the *Tricophyton*.

Sycosis Non-Parasitica (*Sycosis Vulgaris*).—*Characteristics.*—A number of conical, reddish papules, each pierced by a hair, appear in the bearded area. These papules soon become pustular. The hairs become lusterless and loose. At times there is considerable crusting. There is usually some smarting and burning.

Chief Signs.—Occurrence in men; chronicity.

Erysipelas.—*Characteristics.*—The inflammation usually begins in the neighborhood of the nose and spreads laterally and upward over the head to the neck, where it frequently stops. The affected part has a crimson hue, is swollen and tense, and frequently ends in a sharply defined ridge. The surface is at first smooth and glazed, but later is covered with minute vesicles or blebs. There is burning and tingling. The surrounding parts are very edematous. Desquamation follows in a few days.

Chief Signs.—Acute onset with rigor and fever (104° – 105°); duration a few days with crisis or rapid lysis.

Syphilis.—*Characteristics.*—The macular syphilid of the secondary stage is more prevalent upon the limbs and trunk than upon the face. The lenticular papular syphilids occur on the face as well as over the rest of the body. The discoid lesions may appear on the face as on the body. The discoid annular syphilids are especially common around the angles of the mouth and eyes of Negroes; at

times they coalesce to form a large plaque of a dark red color. The agminate nodules of late syphilis, discrete or confluent, are common upon the face; they may become covered with heavy scales and may or may not leave scars. Gummata may occur on the forehead, beginning as deep-seated nodes, which become necrotic and form round, punched-out ulcers; they may have thick laminated crusts (rupia). The tuberculous gummata develop more superficially in patches an inch or more in diameter. Mucous patches may occur about the angles of the mouth, and in congenital syphilis leave radiating scars (rhagades).

Acne Rosacea.—*Characteristics.*—Dilated venules appear upon the nose, cheeks, chin, and middle of the forehead, becoming steadily worse. Pustules may develop in the sebaceous glands. Later fibrous thickening of the nose with sebaceous gland enlargement and infection takes place (rhinophyma).

Chief Signs.—Occurrence in middle life; often present in drinkers.

Milium.—*Characteristics.*—Small, white, horny concretions situated at the mouth of the sebaceous ducts are present about the eyelids and adjacent skin.

Chloasma.—*Characteristics.*—An increased localized deposit of pigment in the skin occurs especially upon the forehead, the temples, and the upper posterior parts of the cheeks. The areas are usually of a pale yellowish-brown color.

Chief Signs.—Occurrence commonly in women, often in pregnancy and in various ovarian derangements.

Leukoderma (Vitiligo).—*Characteristics.*—Irregular white patches totally devoid of pigment, the borders of which are usually hyperpigmented for a quarter of an inch, appear and slowly increase in size. The patches always have convex edges. The hair growing from them is often white.

Herpes Simplex.—*Characteristics.*—A small clump of vesicles occurs upon an inflammatory base, the contents of which become puriform, dry up, and form reddish-brown crusts that fall off in a few days. Burning and tingling precede and accompany the eruption.

Chief Signs.—Acute onset; absence of glandular enlargement; duration a few days.

Herpes Zoster (Shingles).—*Characteristics.*—Clusters of vesicles on an inflammatory base appear usually along the course of a supra-orbital nerve. The lesions are similar to those of herpes simplex. Sharp neuralgic pain precedes and accompanies the eruption.

Chief Signs.—Acute onset; fever and malaise; glandular involvement.

Nevus (Birth-Mark; Pigmented Mole).—*Characteristics.*—The ordinary pigmented moles are flat or elevated, soft in consistency and vary in diameter up to half an inch or more, and may or may not have a tuft of coarse black hairs.

Chief Signs.—Occurrence from birth.

Epithelioma (Prickle-Cell Cancer).—*Characteristics.*—The fully developed lesion is characteristic. It is an ulcer, irregular in shape, with a surface which is irregular and more or less verrucose, resembling friable granulation tissue which bleeds easily. The edges are thickened and of a stony hardness. The secretion is scanty and bloody. There may be pain. As the ulcer develops it may be covered by a scab. It is not as common on the face as on the lip.

Chief Signs.—Occurrence in later life; sooner or later metastasis to the lymph

glands, the nearest first; rapid development after the primary lump; chronicity; biopsy.

Lupus Vulgaris.—*Characteristics.*—The lesion is a shallow irregular ulcer, overhung by the borders of skin. Growth is always slow, taking from three to six months to reach an inch in diameter. At the borders the individual tubercles appear as “apple-jelly” nodules under pressure of a glass slide. A crust soon forms and after a year or more the center of the lesion heals, the ulceration advancing at the edges. There may be several centers of ulceration. Bones are never involved and there is little secretion. The most common site is the face near the nose.

Chief Signs.—Occurrence in early life; absence of signs of syphilis; biopsy.

Rodent Ulcer (*Basal-Cell Cancer*).—*Characteristics.*—The typical lesion is an ulcer occurring especially around the eyelids and in the nasofacial grooves, but also common elsewhere on the face. It has an indurated margin of irregular outline and an uneven glazed base which exudes a sanious, viscid secretion. It begins as a papule which becomes scaly and later develops into an excoriation covered by a crust. It usually implicates the underlying bone as the crater deepens.

Chief Signs.—Occurrence in later life; development on a keratosis, scar, or papilloma; slow growth; absence of metastasis or glandular involvement; biopsy.

Dermatitis Venenata (*Ivy Poisoning*).—*Characteristics.*—The skin becomes red and swollen and soon minute papules and vesicles appear.

Chief Signs.—History of contact; burning and itching; duration a few days to several weeks.

Lupus Erythematosus.—*Characteristics.*—Chronic reddish, slightly elevated patches occur usually upon the cheeks and nose, roughly symmetrical and few in number. They are scaly and spread peripherally, leaving scar tissue behind. The periphery of the patch is elevated, the center depressed and atrophied. Frequently a butterfly-shaped patch is seen involving the bridge of the nose and adjacent parts of both cheeks. The sebaceous glands often contain horny plugs.

Chief Signs.—Occurrence in adults; chronicity; absence of subjective symptoms; no tendency to ulceration.

Benign Fibro-Epithelioma (*Congenital Wart; Non-Pigmented Mole*).—*Characteristics.*—A semiglobular growth is present from which a bunch of hairs may protrude. They vary in size from one-sixteenth to one-half inch in diameter and are clearly attached to the skin and not to any deeper structures. Another type is the filiform wart, and still another the large pedunculated growth.

Chief Signs.—Occurrence from birth.

Angioma Simplex (*Port Wine Mark*).—*Characteristics.*—A non-elevated bright red or purple red patch is present which may cover an area of several inches. It is composed of a congeries of capillaries.

Tinea Circinata (*Ringworm of the Face*).—*Characteristics.*—A small, red, slightly raised spot appears, gradually spreads at the edges, and becomes scaly. It fades away at the center as the circle enlarges, leaving a slightly discolored, brawny area which forms the inside of a red ring. In other cases the lesions appear as patches rather than rings. There may be several lesions. Minute papules and vesicles may be present at the edges.

Chief Signs.—May be considerable itching and some inflammation; presence of the *microsporon* or *trichophyton*.

Seborrhea Oleosa.—*Characteristics.*—The skin of the forehead and the regions of the nose and face are bathed in oleaginous material that has exuded from the sebaceous follicles. From irritation the parts are often red.

Chief Signs.—Occurrence at puberty or at the menopause; frequent association with comedones and acne.

Erythema Multiforme.—*Characteristics.*—The face is one of the sites of predilection, the hands, legs, and forearms being the others. Crops of papules, macules, or vesicles develop from time to time, irregular in shape, sharply circumscribed, and varying in color from a pale pink to a bright red or even a yellow color. The macular variety often forms distinct rings, or there may be rings within rings (usually on the trunk).

Chief Signs.—Acute onset with malaise, fever, headache, joint pains; absence of itching (may be pain or burning); duration one to two weeks.

Less Common Causes.—Xeroderma pigmentosum; pityriasis alba faciei; angioma cavernosum; telangiectasis (acquired); leprosy; seborrheic dermatitis (extending downward from the scalp); scrofula; papulonecrotic tuberculids; scleroderma; sclerema neonatorum; cornu cutaneum; molluscum contagiosum; blastomycosis; granuloma pyogenicum; sarcoid; dermatitis medicamentosa.

THE EYE

DIVISIONS	PAGE
The Eyelids	60
The Conjunctiva, Cornea, and Sclera	74
The Eyeballs	84
The Pupils	98
The Lens	107
The Fundus (Ophthalmoscopic Findings)	109
Vision	116

THE EYELIDS

SYMPTOMS	PAGE
Ptoxis (Falling or Drooping of the Upper Eyelids)	61
Lagophthalmos (The eyelids are always open.)	64
Ecchymosis of the Eyelids ("Black Eye")	64
Swelling of the Eyelids (Puffiness; Edema)	65
Localized Swellings of the Eyelids	67

Ulcers of the Eyelids	69
Crusted Eyelids	69
Skin Affections of the Eyelids	70
Darkened Eyelids	71
Deformity of the Eyelids	72
Nictitation and Blepharospasm (The eyelids wink and blink excessively.)	72

PTOSIS

(*Falling or Drooping of the Upper Eyelids*)

Ptosis may occur from any lesion implicating the third cranial nerve (the oculomotor), either centrally or peripherally; or it may be due to weakness of the levatores palpebrarum muscles. It is present in many diseases of the central nervous system, and in other conditions as well. It is also found in all inflammatory conditions of the conjunctiva associated with edema and infiltration of the lids. Pseudoptosis is described below.

Cerebral Syphilis.—*Characteristics.*—Transient unilateral ptosis is not uncommon; and while it may occur alone, it is usually associated with other palsies due to involvement of other branches of the third nerve (strabismus, diplopia) and other cranial nerves, most commonly the second, sixth, and seventh. An insignificant transient ptosis or a tendency to strabismus may be the only evidence of a basal meningitis and indicates that more trouble may be expected.

Chief Signs.—History of syphilis (two to five years before); mental symptoms (from fretfulness to dementia); insomnia; attacks of somnolence; vertigo; cranial nerve palsies (especially the second, third and sixth); may be epileptiform attacks, transient aphasia or paralysis; positive Wassermann; spinal fluid (positive Wassermann, lymphocytosis, increased globulin, colloidal gold reaction, luetic curve).

Tabes Dorsalis (Locomotor Ataxia).—*Characteristics.*—Ptosis, single or double, is often an early sign, and may be fleeting. Later it may be more persistent. Ptosis, a squint, or the Argyll-Robertson pupil may be the first symptom, and may exist with the loss only of the knee-jerk.

Chief Signs.—History of syphilis (six to fifteen years previous); lightning pains; absence of the knee-jerks; Argyll-Robertson pupils; Romberg's sign; later ataxic gait; sensory changes; trophic lesions; hypertonia; visceral crises; difficulty in micturition; optic atrophy; ocular palsies; positive Wassermann; spinal fluid examination (positive Wassermann, increased globulin, lymphocytosis, colloidal gold reaction, tabetic curve).

Facial Paralysis.—*Characteristics.*—When accompanied by ptosis and other cranial nerve palsies, facial paralysis suggests cerebral syphilis. (See above.)

Neurosis ("Neurasthenia").—*Characteristics.*—Drooping of one eyelid is very common, probably owing to insufficient innervation on the part of the sympathetic rather than to paresis of the oculomotor nerve.

Chief Signs.—See page 40.

Neurosis ("Hysteria").—*Characteristics.*—Bilateral ptosis occasionally occurs from spasm of the orbicularis oculi, and is really a pseudoptosis. The onset is spontaneous, or follows emotion, pain, fit, or injury. It often disappears suddenly, even after long duration, but may recur.

Chief Signs.—See page 40.

Cerebral Tumor.—*Characteristics.*—Tumors of the corpora quadrigemina (and of the pineal body) are localized with comparative ease by the presence of characteristic ocular phenomena; the commonest sign is a combination of bilateral ptosis with weakness of the upward and downward movements of the eyes and feebleness of convergence, and with sluggish or absent pupillary reflexes. Tumors of the tegmental region of the crus or pons (if involving the red nucleus) cause third nerve palsy with ptosis on the side of the lesion and a slow rhythmic tremor of the limbs on the opposite side (Benedict's syndrome). A tumor of the crista or ventral region of the crus cerebri is easy of recognition by the occurrence of third nerve palsy with ptosis on the side of the lesion and hemiplegia on the opposite side (Weber's syndrome).

Chief Signs.—See page 10.

Tuberculous Meningitis.—*Characteristics.*—Paralysis of the muscles of the eye and face, including ptosis, is common. The paralyzes are often transitory, or show frequent variations in degree. These occur in the second stage, that of increasing intracranial pressure.

Chief Signs.—Insidious onset; change of disposition; irregular pulse and fever; signs of meningeal irritation; severe headache; various cranial nerve palsies; coma; discovery of a tuberculous focus; spinal fluid (clarity, lymphocytosis, tubercle bacilli, increased pressure).

Congenital Ptosis.—*Characteristics.*—A mild bilateral ptosis occurs due to absent or poorly developed levator muscles, associated with smoothness of the upper lids and absence of all the usual cutaneous folds. Efforts to open the eye are made by the occipitofrontalis muscle.

Chief Signs.—Occurrence in weak, under-developed infants and children.

Pseudoptosis (Sympathetic Paralysis; Horner's Syndrome).—*Characteristics.*—There is drooping of one lid with contraction of the pupil on the same side, and the eyeball appears to have shrunk into its orbit. It is associated with heat, redness, and edema of the skin on the same side of the face.

Chief Signs.—Occurrence in goiter, neck injury, hematomyelia, gliosis, myelitis, convulsive tics, hysteria; conservation of the psychical and light reflexes of the pupil.

Ptosis of Weak, Delicate Women.—*Characteristics.*—A bilateral, transient ptosis, most evident in the morning on waking is not uncommon ("matutinal ptosis").

Encephalitis Lethargica (Epidemic Encephalitis).—*Characteristics.*—Ptosis is one of the most frequent oculomotor manifestations, usually coincident with the drowsiness. It is rather unusual in appearance, resembling that seen in hysteria or myasthenia gravis, being partial and without attempted compensation on the part of the patient by raising the corresponding eyebrow. At times there is no

ptosis, but the eyes are kept partially closed on account of photophobia. Infrequent winking may occur (Stellwag's sign).

Chief Signs.—Sudden onset with slight nasal discharge, fever, and sweating, followed in a day or two by restlessness; headache; anorexia; constipation; often vomiting; possibly nocturnal delirium, subsiding in three to fourteen days, followed by abnormal drowsiness, the drowsiness passing in a week into lethargy and stupor; appearance of ptosis and other cranial nerve palsies; diplopia; may be meningeal symptoms; muscular hypertonia or rigidity; coarse tremor; choreo-athetoid movements; emotionalism; whispering monotonous speech or dysarthria; may be paralysis; psychotic manifestations; moderate leukocytosis (nine thousand or higher); spinal fluid normal or slightly altered.

Ophthalmoplegic Migraine.—*Characteristics.*—Ptosis and loss of certain eye movements occur with or after a migraine attack on the same side as the lesion. It is transitory, and may or may not occur with each attack.

Chief Signs.—As in migraine, see page 90.

Acute Cerebrospinal Leptomeningitis.—*Characteristics.*—Ptosis as well as other cranial nerve palsies, may occur.

Chief Signs.—As in cerebrospinal fever, see page 8.

Myasthenia Gravis.—*Characteristics.*—Bilateral ptosis is rarely absent, and weakness of the orbicularis oculi prevents closure of the eyelids against slight resistance. Fatigue increases these phenomena.

Chief Signs.—Normal muscular movement followed on repetition by rapid weakening and paresis; tendency of the head to fall forward on the chest due to weakness of the muscles of the neck; strabismus and diplopia; may be coarse nystagmoid movements; "lost" facial expression; mouth open; dribbling; weak mastication; may be nasal speech and regurgitation; may be dyspnea; myasthenic muscular reaction (quick loss of faradic stimulation); tendency to remissions.

General Paresis.—*Characteristics.*—Ptosis or strabismus of the persisting kind occasionally occurs.

Chief Signs.—See page 41.

Progressive Muscular Atrophy.—*Characteristics.*—The face often escapes, but bilateral ptosis, associated with paralysis of the muscles of the face, is occasionally an early or a late manifestation.

Chief Signs.—See page 319.

Ophthalmoplegia Externa.—*Characteristics.*—This affection, which is rare as a pure nuclear degeneration, usually commences as a bilateral ptosis, progressing to a complete immobility of the eyeballs.

Chief Signs.—Chronic progressive course; exclusion of organic primary lesion.

Chronic Progressive Ophthalmoplegia.—*Characteristics.*—This rare affection begins as a ptosis, usually worse on one side, and slowly progresses to complete immobility of the eyeballs, with dilated fixed pupils. Bulbar paralysis may also develop.

Chief Signs.—Chronic progressive course; exclusion of organic primary lesion.

Less Common Causes.—Acute ascending paralysis; apoplexy (cortical); botulism; bulbar paralysis; cerebral concussion; conium poisoning; gelsemium poisoning; diphtheritic paralysis; cerebral syphiloma; "jaw winkers"; Mikulicz's disease; orbital disease; paralysis agitans; pellagra; syringomyelia; tetanus; old trachoma;

trigeminal neuralgia (from orbicularis oculi spasm); vertigo; angioneurotic edema; chronic atrophic ptosis; blepharochalasis.

LAGOPHTHALMOS

(The eyelids are always open.)

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics*.—The palpebral aperture is wider than in health, owing to spasm or retraction of the upper lid, and the patient winks less frequently than in health (Stellwag's sign). Exophthalmos is usually present, also the upper lid does not follow the downward movement of the eye or lags behind (Von Graefe's sign).

Chief Signs.—See page 40.

Facial Paralysis.—*Characteristics*.—The palpebral fissure on the affected side is widened by drooping of the lower lid, caused by paralysis of the orbicularis oculi muscle. The eye cannot be closed.

For causes of Facial Paralysis, see page 47.

Contracted Cicatrix.—*Characteristics*.—Scars in the neighborhood of the eye, obviously, when contracting, may draw the eyeballs in such a way as to uncover the globe to a greater or less degree.

Staphyloma.—*Characteristics*.—The protrusion of the bulging cornea may prevent the lids from closing.

Chief Signs.—See page 82.

Tumor of the Orbit.—*Characteristics*.—The eyelids move sluggishly because of the proptosis and widening of the palpebral slit. This condition is unilateral.

Chief Signs.—See page 96.

Less Common Causes.—Facioscapulohumeral paralysis; leprosy; orbital abscess; orbital hemorrhage; ablepharia (congenital absence of the lids); fracture of the base of the skull.

ECCHYMOSIS OF THE EYELIDS

("Black Eye")

The commonest cause of ecchymosis of the lids or "black eye" is a direct blow on or near the eye. Severe straining as in vomiting, convulsions, or straining at stool, may also produce the condition. The lids may swell from the capillary hemorrhage and soon become black. A gradual absorption of the effused blood takes place, requiring a week or longer for its completion, with evolution through various color changes.

Whooping-Cough (*Pertussis*).—*Characteristics*.—After very severe paroxysms small extravasations into the cellular tissues beneath the eyes are occasionally seen, giving an appearance somewhat like an ordinary "black eye."

Chief Signs.—See page 358.

Infantile Scurvy (*Barlow's Disease*).—*Characteristics*.—There sometimes develops a rather sudden proptosis of one eyeball, with puffiness and slight staining of the upper lid (orbital hemorrhage).

Chief Signs.—See page 34.

Scurvy (*Scorbutus*).—*Characteristics*.—The slightest bruise or injury causes hemorrhage into the traumatized part.

Chief Signs.—See page 34.

Fracture of the Base of the Skull.—*Characteristics*.—Ecchymosis of the lower lid close to the margin of the orbit and in the region of the inner angle of the eye may accompany subconjunctival hemorrhages following this kind of injury.

Chief Signs.—See page 105.

Epilepsy.—*Characteristics*.—Petechial hemorrhage in the eyelids, face, neck, and chest may follow a severe convulsive attack.

Chief Signs.—See page 46.

Purpura Hæmorrhagica.—*Characteristics*.—After a few days of weakness and debility, purpuric spots appear on the skin (including at times the eyelids) and rapidly increase in number and size.

Chief Signs.—See page 791.

Hemophilia.—*Characteristics*.—A slight injury, of no moment in a normal person, determines a hemorrhage. The eyelids may thus be involved by a trifling bruise.

Chief Signs.—See page 825.

Less Common Causes.—Infective endocarditis; malignant measles; cerebral thrombosis; malignant smallpox; malignant typhus.

SWELLING OF THE EYELIDS

(*Puffiness; Edema*)

(See also "Localized Swellings of the Eyelids," page 67.)

Edema of the eyelids is inflammatory or not inflammatory in origin. It may result from trauma, in which case the lid is usually markedly ecchymotic ("black eye"); or from the sting of insects, in which event the history is important; and is seen with severe inflammations of the conjunctiva, the cornea, the uvula, and especially with infections of the globe, *e.g.*, panophthalmitis, and in association with glaucoma, in all of which it is easily recognized as a secondary involvement of the inflammatory eye condition. Puffiness may also follow severe vomiting, bouts of crying, and prolonged attacks of coughing.

Acute Parenchymatous Nephritis (*Acute Bright's Disease*).—*Characteristics*.—Puffiness of the eyelids and face, and of the ankles, is present at the outset. Later general anasarca develops with marked edema of the lids.

Chief Signs.—See page 49.

Chronic Parenchymatous Nephritis (*Chronic Bright's Disease*).—*Characteristics*.—The eyelids are puffy, especially in the morning, and may partake of a general edema of the face.

Chief Signs.—See page 50.

Nephrosis.—*Characteristics*.—Edema is general, involving the eyelids and face.

Chief Signs.—See page 50.

Measles (*Morbilli; Rubeola*).—*Characteristics*.—With the full eruption there is a considerable swelling of the eyelids and face. Persistent non-inflammatory edema sometimes follows the disease in children.

Chief Signs.—See page 194.

Whooping-Cough (*Pertussis*).—*Characteristics.*—The face is often bloated from the constant congestion, and is most marked in the eyelids, possibly associated with ecchymoses.

Chief Signs.—See page 358.

Ethmoiditis.—*Characteristics.*—There may be a tumefaction, especially of the inner third of the lid, usually associated with imperfect movement of the eyeball and diplopia, severe neuralgic pain and profuse lacrimation.

Chief Signs.—Discharge of creamy, tenacious mucus from the nose; exacerbations of dull heavy pain between the eyes with tenderness on pressure against root of the nose or inner canthus; may be displacement of the eyeball downward and outward with diplopia; rhinoscopy (revealing the origin of the pus); x-ray.

Maxillary Sinusitis (*Antritis; Empyema of the Antrum of Highmore*).—*Characteristics.*—Marked edema of the eyelids may occur; which in long-standing cases assumes a positive brawny consistency.

Chief Signs.—Discharge of pus from one nostril; pain beneath the orbit, or involving the whole side of the face; heat, swelling, and redness over the affected sinus; tenderness of the cheek; painful mastication; rhinoscopy (revealing the source of the pus); transillumination; puncture; x-ray.

Frontal Sinusitis.—*Characteristics.*—Edema of the eyelid may accompany redness and swelling over the sinus.

Chief Signs.—Tenderness beneath the eyebrow (Ewing's point) or over the sinus; supra-orbital pain and headache; discharge from the nose; opacity of the sinus by transillumination and x-ray.

Erysipelas.—*Characteristics.*—The eyelids are rarely attacked primarily but as an extension of the process from the contiguous facial area. There is the same characteristic red, shiny, and later brawny swelling with cutaneous vesicles and small abscesses. The orbital tissues may become involved. The lids may be closed by the swelling.

Chief Signs.—See page 57.

Arsenic Poisoning.—*Characteristics.*—Puffiness of the eyelids, or above the eyebrows is common and may be the first symptom of intolerance.

Chief Signs.—See page 26.

Trichiniasis.—*Characteristics.*—Edema is a feature of great importance and may occur as an early symptom in the face, particularly about the eyes.

Chief Signs.—History of several people affected, after a feast, in which some form of pork is eaten; colicky pains with nausea, vomiting, and serous diarrhea, on the second or third day; intense muscular soreness, with edema and remittent or intermittent fever developing seven to ten days later; presence of trichina in the stools; marked leukocytosis with eosinophilia; biopsy of muscular tissue; examination of suspected food.

Infantile Scurvy (*Barlow's Disease*).—*Characteristics.*—The eyelids are edematous, sometimes in the early stages.

Chief Signs.—See page 34.

Syphilitic Tarsitis.—*Characteristics.*—The tarsal portion of the eyelid is thickened and indurated owing to diffuse gummatous infiltration. There may be crusts and ulcers at the mouths of the hair follicles.

Chief Signs.—Presence of syphilis; chronicity.

Angioneurotic Edema (*Quincke's Disease*).—*Characteristics.*—There is a sudden marked edematous swelling, often of both eyelids, unaccompanied by redness. The appearance is much like that of acute nephritis.

Chief Signs.—Sudden appearance of local edematous swellings (face, eyelids, lip, cheeks, hands, genitalia) with itching, heat, redness, urticaria; gastro-intestinal disturbances (severe colic, pain, nausea, vomiting); sometimes hemoglobinuria; transient duration; hereditary character.

Orbital Cellulitis (*Phlegmon*).—*Characteristics.*—One or both eyelids are swollen and edematous according as the involvement is unilateral or bilateral. There is associated hyperemia and chemosis of the conjunctiva, exophthalmos, diplopia, and limitation of movement of the eyeball.

Chief Signs.—Chills and fever; deep-seated orbital pain; headache; later optic neuritis followed by atrophy; anesthesia and ulceration of the cornea; may be intra-ocular changes; finally fluctuation with pointing below the inner portion of the supra-orbital ridge.

Cavernous Sinus Thrombosis.—*Characteristics.*—Edema of the eyelids and chemosis of the conjunctiva are present, with proptosis, haziness, anesthesia of the cornea, and partial or complete ophthalmoplegia.

Chief Signs.—Presence of an infected lesion on the face, nostrils, eyelids, sinuses, ear; sudden onset; fever, rigor, sweats; headache; drowsiness; involvement of the ocular nerves and first division of the fifth nerve; corneal ulceration; may be optic neuritis.

Myxedema.—*Characteristics.*—There is a non-pitting subcutaneous thickening of the eyelids, occurring as part of a general phenomenon.

Chief Signs.—See page 51.

Cerebral Thrombosis.—*Characteristics.*—There is sometimes a swelling of one or both eyelids, with some protrusion of the eyeballs, the puffiness subsequently extending to the face.

Chief Signs.—See page 10.

Less Common Causes.—Glanders; emphysema; elephantiasis; hay-fever; acute coryza; mediastinitis; smallpox; chickenpox; tenonitis; trachoma; thrombosis of the longitudinal sinus; herpes; leprosy; anthrax; essential edema of the eyelids; iodism; chlorosis; urticaria; migraine; syphilis; mediastinal tumor; aneurysm of the arch of the aorta; solid edema of the eyelids; Mikulicz's disease.

LOCALIZED SWELLINGS OF THE EYELIDS

Stye (*Hordeolum*).—*Characteristics.*—A red swelling appears at the margin of the lid, accompanied by pain, tenderness, and often by considerable edema. Very soon a yellowish point will be seen indicating suppuration.

Chief Signs.—Occurrence commonly in young adults; tendency to appear in crops; association with derangement of general health, constipation, and uncorrected errors of refraction.

Chalazion (*Meibomian Cyst*).—*Characteristics.*—A slowly developing, practically symptomless swelling, the size of a small or large pea, develops near the edge of the lid. It is hard, and is adherent to the tarsal cartilage but not to the skin

On everting the lids its situation is shown by a red or grayish discoloration of the conjunctiva. It is single or multiple and may suppurate.

Abscess (*Phlegmon*).—*Characteristics*.—A localized red elevation appears and is often a severe form of furuncle or hordeolum. The entire lid is hyperemic.

Chief Signs.—Edema and injection of the conjunctiva; considerable pain; headache and fever; history of injury, exposure, orbital disease, or debility; may be thrombosis of the orbital veins or the cavernous sinus.

Cysts of Moll's Glands.—*Characteristics*.—Small cysts with transparent contents, due to obstruction in the outlet of the sweat glands are often seen on the lid border; they give rise to considerable irritation.

Warts and Horns (*Papilloma and Cornu Cutaneum*).—*Characteristics*.—Warts or papillomata are common and similar to those occurring elsewhere. Cutaneous horns (fibroma, molluscum fibrosum) are either sessile or pedunculated connective-tissue new growths, sometimes associated with numerous similar tumors elsewhere on the body. A cornu cutaneum may grow from the margin of the lid.

Furuncle (*Boil*).—*Characteristics*.—There is a localized inflammation of the skin and subcutaneous tissue, with the formation of a small abscess which goes on to the formation of a central slough or "core." The surrounding and overlying tissues may become gangrenous.

Sebaceous Cyst.—*Characteristics*.—This may occur on the outer part of the eyelid as a spherical semifluctuating swelling attached to the skin at one point and containing a cheesy material.

Milium.—*Characteristics*.—A small yellowish-white elevation about the size of a pinhead occurs at the orifice of a sebaceous gland.

Angioma (*Nevus*).—*Characteristics*.—Congenital nevi occur either as bright red spots (capillary angiomas), or in the form of elevated, bluish, somewhat lobulated cavernous growths, which may assume large proportions and extend from the lid to the forehead and temple.

Xanthoma (*Xanthlasma*).—*Characteristics*.—This is a flat, or slightly raised, yellowish discoloration beneath the skin, usually multiple, found most frequently near the inner canthus in elderly women.

Acute Dacryocystitis.—*Characteristics*.—The skin over the lacrimal sac becomes reddened, swollen, and brawny; this condition spreads to adjacent portions of the lids and conjunctiva. After two or three days, a yellow discoloration appears at a point usually somewhat below the sac, indicating the formation of an abscess. The pus may be evacuated, followed by healing, or a fistula may form.

Chief Signs.—Fever; local pain and tenderness.

Foreign Body in the Eyelid.—*Characteristics*.—Fragments of glass, pieces of steel or iron, shot, particles of stone, splinters of wood, etc., may penetrate the tissues of the eyelid and become encysted or cause abscess formation.

Chief Signs.—History of entrance of the foreign body.

Molluscum Contagiosum.—*Characteristics*.—Several small, white, rounded tumors, about the size of small peas, occur upon the eyelids and face. The center is depressed and reveals the dark aperture of a follicle. When squeezed they may exude a soft cheesy material.

Chief Signs.—Occurrence usually in children; absorption after several weeks' duration.

Sarcoma.—*Characteristics.*—A slightly elastic growth appears, covered by freely movable skin, which grows rapidly, ulcerates, and involves the orbit.

Less Common Causes.—Blastomycosis; Mikulicz's disease (of the lacrimal glands); Parinaud's conjunctivitis; gouty tophi; trachoma; neuroma; lipoma; fat hernia; lymphoma; condyloma; tuberculous tarsitis; myoma; adenoma; ecchon-droma; acanthosis nigricans.

ULCERS OF THE EYELIDS

Rodent Ulcer (*Basal-Cell Cancer*).—*Characteristics.*—The inner end of the lower lid margin is most often affected. It begins as a small pimple or wart covered by a crust which soon changes to an ulcer with indurated walls and slowly spreads, involving all the tissues.

Epithelioma (*Prickle-Cell Cancer*).—*Characteristics.*—This lesion usually begins at the lid margin, more often the lower lid, and not infrequently at the outer commissure, involving both lids. A deep ulcer develops from a tubercle; its edges are everted, indurated, and of a reddish-purple color; its base is granular; and it secretes a blood-stained yellow fluid.

Lupus Vulgaris.—*Characteristics.*—The eyelids may be involved secondarily to the condition on the face. Various shaped reddish tubercles appear, which ulcerate and undergo extensive cicatrization. The ulcers are shallow and their edges soft and red.

Chief Signs.—Onset often before puberty; slow course; "apple jelly" nodules at the edges (seen by pressing with a glass slide); biopsy.

Syphilis.—*Characteristics.*—Chancre may occur on the eyelid, usually on the margin near the canthus, as a small, moist, slightly ulcerated patch with considerable induration and swelling. Gumma is uncommon. It breaks down into a deep, inflamed, punched-out ulcer.

Chief Signs.—In chancre:—history of contagion, enlarged preauricular and sub-maxillary glands, dark field examination (spirochetes); in gumma:—positive Wassermann, therapeutic test.

Sarcoma.—*Characteristics.*—This uncommon neoplasm of the eyelid undergoes rapid and extensive ulceration with destruction of the orbit.

Chief Signs.—Occurrence at any age; biopsy.

Smallpox (*Variola*).—*Characteristics.*—The pustules may appear upon the eyelids, preferably at the commissures, and in connection with the follicles of the eyelashes. The subsequent pitting may cause considerable disfigurement. Sometimes a pustule declines to heal and forms a chronic postvariolaous ulcer.

Chief Signs.—See page 770.

Less Common Causes.—Sporotrichosis; anthrax (malignant pustule); diphtheria; chickenpox; vaccinia.

CRUSTED EYELIDS

Blepharitis (*Squamous or Ulcerative Blepharitis*).—*Characteristics.*—Scales or crusts are situated on the margins of both lids at the bases of the eyelashes, or adhering to them, and may be dry or moist. Removal of the hardened sebum

exposes the skin, swollen, shining, red, and occasionally abraded or ulcerated. The lashes become distorted, fall out, and become scarce, although they may be replaced in the squamous variety.

Chief Signs.—General debility or a constitutional diathesis; itching; soreness; epiphora; photophobia; ocular fatigue during work.

Asthenopia (*Errors of Refraction*).—*Characteristics.*—Blepharitis, as described above, is often present in uncorrected hyperopia and astigmatism.

Chief Signs.—Fatigue after use of the eyes; blurred vision; headache; discomfort or tenderness of the eyeballs; ocular examination; relief after rest or correction of the error.

Measles (*Morbilli; Rubeola*).—*Characteristics.*—The eyelids may be glued together with secretions and crusts. Conjunctivitis with blepharitis is common. Chronic blepharitis, as described above, may follow.

Chief Signs.—See page 194.

Marginal Eczema (*Tinea Tarsi; Sycosis Tarsi*).—*Characteristics.*—The margins of the lids are red and sore, and there are crusts, small pustules, and ulcers at the roots of the lashes. The latter do not fall out or grow sparse.

Seborrhea.—*Characteristics.*—There may be crusts and epithelial scales about the eyelashes, with an oily coating of the skin. There is also usually a similar process in the scalp and eyebrow.

Stye (*Hordeolum*).—*Characteristics.*—Blepharitis often accompanies recurring styes.

Chief Signs.—See page 67.

Syphilitic Tarsitis.—*Characteristics.*—There may be a chronic marginal blepharitis, with the formation of crusts and ulcers at the mouths of the hair follicles. The tarsus is greatly thickened and the skin tense and reddened.

Chief Signs.—Presence of syphilis; chronicity.

Less Common Causes.—Ophthalmia; intestinal irritation.

SKIN AFFECTIONS OF THE EYELIDS

(See also "Localized Swellings of the Eyelids," page 67; and
"Ulcers of the Eyelids," page 69.)

Eczema of the Eyelids.—*Characteristics.*—Independently of that variety which is located upon the ciliary margin (see above), occasionally eczema, particularly the erythematous variety, limits itself to the lids and immediate surrounding parts, or more frequently it remains here more obstinately after disappearing from other parts of the face. It begins as hyperemic macules or patches, bright red, accompanied by itching and burning, with later development of thickening, scaling, and oozing of the skin.

Herpes Zoster Ophthalmicus (*Shingles*).—*Characteristics.*—Following neuralgic pain in the region of the eye, an eruption occurs, sometimes involving the eyelids. The eruption presents vesicles on inflamed bases, first clear, later cloudy, becoming crusts which later drop off, leaving scars. The eruption is unilateral and distributed over the area supplied by the frontal, more rarely the nasal branch, of the ophthalmic division of the fifth nerve. The cornea and conjunctiva may be involved. A severe neuralgia may remain after its subsidence.

Herpes Facialis (*Fever Blister*).—*Characteristics*.—Occasionally one or several groups of “fever blisters” develop upon the eyelids. The lesions appear in the form of a small cluster or coalescent patch. The lid is somewhat swollen, reddened, and there is some burning and itching. The lower lid is affected more commonly than the upper.

Erysipelas.—*Characteristics*.—This disease rarely attacks the eyelids as a primary affection, but may spread to them from a contiguous facial area. The chief danger is, of course, extension of the infection into the orbital tissues. The character of the eruption and chief signs will be those of erysipelas of the face. See page 53.

Urticaria (*Hives*).—*Characteristics*.—The wheals may occur on the eyelids, though less commonly than elsewhere, and usually as a part of a more generalized eruption. Pinkish or reddish elevations, the size of a flat pea, with a whitish central portion, are accompanied by much tingling and burning.

Chief Signs.—See page 731.

Phthiriasis (*Blepharitis Pediculosa*).—*Characteristics*.—When the eyelashes are occasionally the site of predilection for the crab-louse, the cilia appear to be sprinkled with a fine, dark powder, the nits of the lice. There are some itching and redness of the border of the lids.

Less Common Causes.—Xeroderma pigmentosum.

DARKENED EYELIDS

A darkening under the eyes is a common symptom, but is of little importance. It may be prominent after fatigue, mental excitement, loss of sleep, or severe pain, and in exhausting diseases. It is seen in some women during menstruation and early in pregnancy.

Masturbation.—*Characteristics*.—Dark circles around the eyes constitute a time-honored, if not always reliable symptom of self-abuse.

Chief Signs.—History of the habit; “neurasthenia”; impotence.

Anemia.—*Characteristics*.—In brunettes suffering from anemia with pallor, duskiness of the eyelids may be very prominent.

Chief Signs.—See page 5.

Menorrhagia.—*Characteristics*.—Dark circles around the eyes may be present. For causes of Menorrhagia, see page 572.

Leukorrhea.—*Characteristics*.—In debilitated women with long-standing leukorrhea, there may be a dark pigmentation of the eyelids.

For causes of Leukorrhea, see page 570.

Dyspepsia.—*Characteristics*.—Chronic dyspepsia with constipation may cause darkened eyelids.

For causes of Dyspepsia, see page 487.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics*.—There is often a dark pigmentation of the eyelids in marked contrast to the glistening white of the eyeballs.

Chief Signs.—See page 40.

Less Common Causes.—Chlorosis; amenorrhea; phthisis.

DEFORMITY OF THE EYELIDS

Ectropion.—*Characteristics.*—The eyelid is everted, with exposure of the conjunctiva.

Chief Signs.—Presence of spastic, paralytic, old inflammatory, senile, or cicatricial condition; epiphora, causing excoriations and eczema of the lower lid; reddening and hypertrophy of the exposed conjunctiva.

Entropion.—*Characteristics.*—The margin of the lid with its lashes is rolled in.

Chief Signs.—History of trachoma, burns, injuries, operations (causing cicatrices); atrophy of the eyeball; blepharospasm; inflammation of the lids and conjunctiva, or prolonged wearing of a bandage (causing spasm in senile patients); congestion; pain; photophobia; lacrimation; vascularization and ulceration of the cornea.

Trichiasis.—*Characteristics.*—There is an inversion of a varying number of lashes, so that they rub against the cornea.

Chief Signs.—History of trachoma, blepharitis, burns, injuries; corneal congestion; vascularization; opacities; ulceration (mechanical irritation); pain; photophobia; lacrimation.

Epicanthus.—*Characteristics.*—A fold of skin passes from the inner end of each brow to the side of the nose, covering the internal canthus, lacrimal punctum, and part of the lid. It is usually associated with ptosis of the lids. The appearance is that of convergent strabismus. Epicanthus is normal in Mongolians.

Symblepharon.—*Characteristics.*—The eyelid is adherent to the eyeball, partially or completely.

Chief Signs.—History of old inflammation, injury, or burn; may be congenital.

Ankyloblepharon.—*Characteristics.*—The borders of the two lids have grown together, partially or completely.

Chief Signs.—As in Symblepharon.

Blepharophimosis.—*Characteristics.*—There is an apparent contraction of the palpebral fissure at its outer canthus, due to this angle being covered and hidden by a vertical fold of skin.

Chief Signs.—History of chronic conjunctivitis.

Less Common Causes.—Ablepharia, totalis or partialis; cryptophthalmos; epitarsus; distichiasis; congenital fistula; supernumerary eyelid.

NICTITATION AND BLEPHAROSPASM

(The eyelids wink or blink excessively.)

(See also "Facial Spasm, Twitching, and Grimacing," page 45.)

Asthenopia (*Weak Sight; Eye-Strain*).—*Characteristics.*—Blepharospasm is often present, usually confined to a few fibers of the orbicularis.

Chief Signs.—Pain in the eyes and headache, aggravated by use and close work; fatigue after use of the eyes; drowsiness; lacrimation; photophobia; congestion, itching and burning; vertigo; reflex symptoms (nausea, facial spasm, migraine);

ocular examination (usually error of refraction, especially astigmatism and hyperopia, or muscular imbalance); relief after correction of the error or rest.

Neurasthenic Asthenopia (*Nervous, Hysterical, or Retinal Asthenopia*).—*Characteristics*.—There is a fibrillary twitching of the eyelids.

Chief Signs.—Headache; intolerance to light; improvement of vision in the dusk and through tinted glasses; diminution of central vision; sudden attacks of amaurosis; processions of scotomas; visual hallucinations; after-images; fatigue contractions of the visual field; evidence of ovarian or uterine disease, neurasthenia, hysteria, or chlorosis.

Conjunctivitis.—*Characteristics*.—There may be considerable blepharospasm, especially in phlyctenular conjunctivitis, and the child will remain in a dark corner or bury its face in a pillow, so that the eyes can be examined only with difficulty.

For causes of Conjunctivitis, see page 74.

Keratitis.—*Characteristics*.—Tonic cramp of the orbicularis muscle is common in inflammation of the cornea.

For causes of Keratitis, see page 80.

Foreign Body in the Eye.—*Characteristics*.—Tonic cramp of the orbicularis is usually present.

Chief Signs.—History of entrance of the foreign body; smarting; conjunctival congestion; lacrimation; finding of the irritating particle.

Habit Chorea.—*Characteristics*.—Children are often affected, especially during their early school years, with undue working of the eyelids, associated, at times, with jerky movements of the facial and other muscles.

Chief Signs.—Presence of blepharitis, follicular or phlyctenular conjunctivitis, or error of refraction and heterophoria.

Tic.—*Characteristics*.—A very obstinate form of blepharospasm is sometimes seen in elderly persons in whom the marked palpebral spasms are accompanied by similar movements of the neighboring facial muscles.

Chorea (*Sydenham's Chorea; St. Vitus' Dance*).—*Characteristics*.—In some cases the spasm is first seen in the facial muscles, with twitchings of the eye muscles, disturbances of articulation, or grimaces.

Chief Signs.—See page 45.

Epilepsy.—*Characteristics*.—During the clonic stage of the convulsion, the eyelids open and close convulsively with rolling of the eyeballs.

Chief Signs.—See page 684.

Albinism.—*Characteristics*.—The eyelids blink frequently due to photophobia.

Chief Signs.—Heredity; pink iris; silver-colored hair; nystagmus; amblyopia; high-grade refractive defects, photophobia.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics*.—There is marked tremor of the eyelids and they contract spasmodically in advance of the elevating eyeball.

Chief Signs.—See page 40.

Less Common Causes.—Catalepsy; paralysis agitans; reflex irritation (worms, cold, dentition); temporal caries; trigeminal neuralgia; tumor pressing on the facial nerve.

THE CONJUNCTIVA, CORNEA, AND SCLERA

SYMPTOMS	PAGE
Redness or Injection of the Conjunctiva ("Bloodshot Eye")	74
Subconjunctival Hemorrhage (Ecchymosis)	76
Lacrimation and Epiphora	77
Mucopurulent or Purulent Discharge from the Conjunctiva	79
Swelling or Chemosis of the Conjunctiva	79
For Pallor of the Conjunctiva, see "Pallor or Sallowiness of the Face," page 31, and for Jaundice of the Conjunctiva see under "General Symptoms," page 732.	
Opaque, Hazy, or Steamy Cornea	80
Symptomatic Keratitis	81
Ulcers of the Cornea	81
Protrusion of the Cornea	82
Arcus Senilis	83
Abolition of the Corneo-Conjunctival Reflex	83
Pearly Sclera	83
Black or Slaty Sclera	84
Bright Blue Sclera	84

REDNESS OR INJECTION OF THE CONJUNCTIVA

("Bloodshot Eye")

Simple hyperemia of the conjunctiva, known as dry catarrh, is caused often by local irritation, as from dust, misplaced cilia, tobacco smoke, irritating gases, cold winds, great heat, and bright light. There is injection, chiefly of the palpebral conjunctiva, with photophobia, some lacrimation, and a hot, stinging sensation, aggravated by the use of the eyes.

Acute Contagious Conjunctivitis ("Pink-Eye").—*Characteristics*.—The entire conjunctiva is deeply injected and small hemorrhages may be observed. The condition is usually bilateral.

Chief Signs.—Thick, ropy, mucopurulent secretion; hot, heavy feeling in the eyes; contagious nature; duration four to ten days; presence of the Koch-Weeks bacillus in the smears.

Acute Catarrhal Conjunctivitis (*Acute Simple Conjunctivitis*).—*Characteristics*.—The palpebral conjunctiva, usually bilaterally, and that of the fornix are a brilliant red color and are swollen. There is usually but slight congestion of the bulbar conjunctiva; but in severe cases this may become marked, with chemosis, small conjunctival hemorrhages, and edema of the lids.

Chief Signs.—Watery, mucoid, or mucopurulent discharge; itching, smarting, and photophobia, worse toward evening; duration, a few days.

Chronic Catarrhal Conjunctivitis (*Chronic Simple Conjunctivitis*).—*Characteristics*.—The conjunctiva of the lids is reddened and smooth.

Chief Signs.—Chronicity; slight secretion; itching, burning, smarting, and a sensation of dryness, worse at night; heavy, sleepy feeling in the lids; blepharitis and epiphora.

Gonorrheal Ophthalmia (*Adult Purulent Conjunctivitis*).—*Characteristics*.—The conjunctiva of the lids and fornix is intensely swollen, reddened, and uneven, and in severe cases it may be covered with a membranous deposit. There is great swelling, redness, and tenseness of the lids. The condition is usually unilateral.

Chief Signs.—History of contagion; constitutional disturbance; chemosis; smarting pain in the eye with dull aching in the brow and temple; secretion, at first serous, later profuse and purulent; frequently corneal ulceration; duration, ten days to two weeks; finding of the gonococcus in the smear.

Ophthalmia Neonatorum (*Infantile Purulent Conjunctivitis*).—*Characteristics*.—There is at first a slight redness of the conjunctiva, rapidly succeeded by great cushionlike swelling of the lids, with intense chemosis and congestion of the conjunctiva. Both eyes are usually involved.

Chief Signs.—Occurrence two or three days after birth; history of gonorrhea in the mother; profuse discharge of yellow or greenish-yellow pus; formation of a false membrane; duration, six to eight weeks; presence of gonococci in the smear.

Phlyctenular Conjunctivitis.—*Characteristics*.—One or more small grayish elevations about the size of a millet seed (1 or 2 mm.) are present on the conjunctiva or cornea, frequently at the limbus, each surrounded by an area of conjunctival hyperemia.

Chief Signs.—Occurrence in tuberculous and poorly nourished children; lacrimation; blepharitis; belpharospasm; photophobia; occurrence of phlyctenules in crops, each lasting a few days and healing without permanent changes; tendency to relapses.

Foreign Body in the Eye.—*Characteristics*.—There is congestion of the palpebral conjunctiva.

Chief Signs.—See page 73.

Iritis.—*Characteristics*.—There is always circumcorneal injection, and with this pink zone there may be more or less conjunctival congestion.

Chief Signs.—Pain; photophobia; lacrimation; interference with vision; iris swollen, dull, lusterless, muddy; pupil contracted, sluggish, grayish, irregular in outline; turbidity of the aqueous humor; may be dustlike deposit on Descemet's membrane.

Acute Glaucoma.—*Characteristics*.—The ocular conjunctiva is markedly congested and chemotic, and the lids are swollen and edematous.

Chief Signs.—See page 80.

Trachoma (*Granular Conjunctivitis*).—*Characteristics*.—The conjunctiva of the tarsus and fornix is reddened, thickened, and uneven, on account of hypertrophy and the occurrence of granulations. The ocular conjunctiva is often somewhat congested.

Chief Signs.—May or may not be photophobia, lacrimation, itching and burning, pain, and visual disturbance; may be swelling of the lids, narrowing of the

palpebral fissure, drooping of the lids, mucopurulent discharge; presence of papules and granulations on the palpebral conjunctiva which finally become cicatrized.

Asthenopia (*Eye-Strain*).—*Characteristics*.—There is congestion of the conjunctiva and margins of the lids.

Chief Signs.—See page 72.

Pannus.—*Characteristics*.—This consists of newly formed vascular tissue, which usually covers the upper part of the cornea. The affected portion is cloudy, grayish, and translucent, its surface uneven and vascularized, the blood-vessels springing from the conjunctival vessels at the limbus.

Acute Dacryocystitis.—*Characteristics*.—The portions of the lid and conjunctiva adjacent to the inflamed lacrimal sac become reddened, swollen, and brawny, and the condition may resemble erysipelas.

Chief Signs.—See page 68.

Hay-Fever.—*Characteristics*.—There may be a simple hyperemia of the palpebral conjunctiva with lacrimation and photophobia, or even an associated acute catarrhal conjunctivitis.

Chief Signs.—Seasonal occurrence (usually during pollination); fits of sneezing; headache; lacrimation; watery, copious, and continuous nasal discharge; general depression; may be cough; determination of sensitization by skin tests.

Measles (*Morbilli; Rubeola*).—*Characteristics*.—The characteristic symptoms of the invasion are those of a severe coryza, with redness of the eyes and lids, lacrimation, photophobia, sneezing and running at the nose, and cough.

Chief Signs.—See page 194.

Acute Rhinitis (*Common Cold; Acute Coryza*).—*Characteristics*.—The conjunctiva may be injected in severe cases. There may be catarrhal conjunctivitis.

Chief Signs.—See page 155.

Whooping-Cough (*Pertussis*).—*Characteristics*.—In the catarrhal stage the child has the symptoms of an ordinary cold, with slight fever, infection of the eyes, running at the nose, and a bronchial cough. During the paroxysm of coughing the conjunctivæ become deeply engorged and the eyeballs protude.

Chief Signs.—See page 358.

Influenza (*La Grippe; Grip*).—*Characteristics*.—In the simple forms, the disease sets in with coryza, and there is injection of the conjunctiva; acute catarrhal conjunctivitis may occur.

Chief Signs.—See page 86.

Less Common Causes.—Chronic arsenic poisoning; iodism; facial paralysis; adenoids; meningitis; trigeminal neuralgia; pachymeningitis; episcleritis; brawny scleritis; influenza-bacillus conjunctivitis; pneumococcus conjunctivitis; scarlet fever; smallpox; chickenpox; purulent conjunctivitis of young girls; vernal conjunctivitis; follicular conjunctivitis; conjunctivitis nodosa; Parinaud's conjunctivitis; angioma.

SUBCONJUNCTIVAL HEMORRHAGE

(*Ecchymosis*)

A blow in the eye, severe straining, and vomiting may occasion an extravasation of blood beneath the conjunctiva; the cause is obvious and the condition of little

importance. Ecchymosis may arise without obvious cause, however, especially in elderly persons, and has been seen in young girls at the time of the menstrual epoch. It may occur also during severe conjunctival inflammations.

Fracture of the Base of the Skull.—*Characteristics.*—In fracture involving the anterior fossa of the skull, blood may travel along the floor of the orbit, and after a day or two appear in the lower lid and bulbar conjunctiva.

Chief Signs.—See page 105.

Whooping-Cough (*Pertussis*).—*Characteristics.*—During a paroxysm of coughing there are apt to be hemorrhages, such as ecchymosis of the conjunctiva, and even bleeding of tears of blood.

Chief Signs.—See page 358.

Traumatic Asphyxia.—*Characteristics.*—Subconjunctival hemorrhage is the rule.

Chief Signs.—History of violent and sudden compression of the trunk; cyanosis of the head, neck, and shoulders, with deeper spots of the hemorrhage in the skin and mucous membranes; may be bleeding from the nose, mouth, and ears; brief or prolonged unconsciousness; circulatory and respiratory depression.

Epilepsy.—*Characteristics.*—There may be subconjunctival ecchymosis and petechial hemorrhages scattered over the neck and chest following the convulsion, if the attack has been severe.

Chief Signs.—See page 46.

Arteriosclerosis.—*Characteristics.*—Subconjunctival hemorrhages may follow severe strain and may recur.

Chief Signs.—See page 9.

Chronic Interstitial Nephritis.—*Characteristics.*—Recurring conjunctival and palpebral hemorrhages are fairly common, particularly in the arteriosclerotic form.

Chief Signs.—See page 754.

Less Common Causes.—Diabetes; ulcerative endocarditis; thrombosis of the cavernous sinus; yellow fever; scurvy.

LACRIMATION AND EPIPHORA

Lacrimation is an excessive secretion and discharge of tears; epiphora is an abnormal overflow of tears down the cheek due to stricture of the lacrimal passages which drain the tears off through the nose, or to the malposition of the punctum lacrimale.

Acute Catarrhal Conjunctivitis.—*Characteristics.*—In mild cases the secretion is watery, with some flakes of mucus. In running over the edges of the lids, the secretion may excoriate the surrounding skin.

Chief Signs.—See page 74.

Chronic Catarrhal Conjunctivitis.—*Characteristics.*—Epiphora is not uncommon, due to eversion of the inferior punctum from blepharitis and eczema of the lower lids.

Chief Signs.—See page 75.

Foreign Body in the Eye.—*Characteristics.*—The eye waters easily and profusely.

Chief Signs.—See page 73.

Asthenopia (*Eye-Strain*).—*Characteristics*.—There is lacrimation after use of the eyes, and they water upon the slightest irritation.

Chief Signs.—See page 72.

Iritis.—*Characteristics*.—Lacrimation is severe in those cases of acute and violent onset.

Chief Signs.—See page 85.

Keratitis.—*Characteristics*.—Lacrimation, pain, photophobia, blepharospasm, and interference with vision occur in inflammations of the cornea. Sometimes they are slight, or even absent, in ulcer of the cornea, but are usually present in the acute stage.

Chief Signs.—See page 80.

Ectropion.—*Characteristics*.—The tears flow down over the cheek due to eversion of the punctum. They may cause excoriation and eczema of the lower lid.

Chief Signs.—See page 72.

Chronic Dacryocystitis.—*Characteristics*.—The constant symptom is epiphora, increased by exposure to cold, wind, dust, smoke, etc.

Chief Signs.—Fullness in the region of the lacrimal sac; escape of viscid fluid from the puncta by pressure on the sac; chronicity.

Blepharitis.—*Characteristics*.—Epiphora usually occurs.

Chief Signs.—See page 69.

Hay-Fever.—*Characteristics*.—Lacrimation is a prominent and distressing feature of the disease.

Chief Signs.—See page 76.

Acute Rhinitis (*Common Cold; Acute Coryza*).—*Characteristics*.—Lacrimation occurs with a sensation of heat in and below the eyes.

Chief Signs.—See page 155.

Measles (*Morbilli; Rubeola*).—*Characteristics*.—Increased lacrimation is one of the catarrhal symptoms of the invasion.

Chief Signs.—See page 194.

Influenza (*La Grippe; Grip*).—*Characteristics*.—The disease often sets in with the symptoms of an acute coryza, with lacrimation.

Chief Signs.—See page 86.

Whooping-Cough (*Pertussis*).—*Characteristics*.—In the catarrhal stage there is lacrimation with other symptoms of an ordinary cold.

Chief Signs.—See page 358.

Facial Paralysis.—*Characteristics*.—Watering of the eye on the affected side is sometimes an early symptom, and is caused partly by the loss of the compression power of the lid and partly by a falling away of the punctum.

For causes of Facial Paralysis, see page 47.

Chronic Alcoholism.—*Characteristics*.—The eyes are watery, and the conjunctiva hypermic and sometimes bile-tinged.

Chief Signs.—See page 37.

Less Common Causes.—Bronchial asthma; chlorosis; trachoma; Parinaud's conjunctivitis; adenoids; iodism; mumps; styte; stenosis or obstruction of the punctum and canaliculi; tumor of the eyelid near the punctum; trigeminal neuralgia; typhus fever; facioscapulohumeral muscular paralysis; exophthalmic goiter.

MUCOPURULENT OR PURULENT DISCHARGE FROM THE CONJUNCTIVA

Acute Catarrhal Conjunctivitis (*Acute Simple Conjunctivitis*).—*Characteristics*.—In mild cases the secretion is watery, with some flakes of mucus; later it is mucoid. In severe cases it is mucopurulent or even purulent.

Chief Signs.—See page 74.

Acute Contagious Conjunctivitis (*"Pink-Eye"*).—*Characteristics*.—There is a profuse discharge of a thick, ropy secretion, which may be gathered into long strings of mucus. Later the discharge may become distinctly purulent.

Chief Signs.—See page 74.

Gonorrheal Ophthalmia (*Adult Purulent Conjunctivitis*).—*Characteristics*.—The secretion is at first serous, but soon a profuse purulent discharge appears, which escapes continuously from between the lids.

Chief Signs.—See page 75.

Ophthalmia Neonatorum (*Infantile Purulent Conjunctivitis*).—*Characteristics*.—The discharge which at first is slightly turbid, soon changes to a yellow or greenish-yellow pus, and is secreted in great quantities.

Chief Signs.—See page 75.

Trachoma (*Granular Conjunctivitis*).—*Characteristics*.—Occasionally the invasion is acute and accompanied by marked inflammatory symptoms and a profuse purulent discharge. In the more chronic forms there may be a variable amount of mucopurulent discharge, usually scanty.

Chief Signs.—See page 75.

Less Common Causes.—Diphtheritic conjunctivitis; abscess of the sac.

SWELLING OR CHEMOSIS OF THE CONJUNCTIVA

Gonorrheal Ophthalmia (*Adult Purulent Conjunctivitis*).—*Characteristics*.—There is intense congestion and chemosis of the conjunctiva, forming a hard ring about the cornea.

Chief Signs.—See page 75.

Suppurative Iridochoroiditis (*and Panophthalmitis*).—*Characteristics*.—Chemosis is marked, and is accompanied by intense conjunctival congestion and swelling of the lids, and there is much pain.

Chief Signs.—May be history of a wound, injury or infection; fever, chills, nausea, and vomiting; tenderness of the globe; haziness of the cornea; inflammation of the iris and ciliary body; may be hypopyon; loss of vision; ophthalmoscopy (revealing a mass of exudation behind the lens in the vitreous if the anterior chamber is transparent).

Acute Glaucoma.—*Characteristics*.—The ocular conjunctiva is markedly congested and chemotic.

Chief Signs.—See page 80.

Orbital Cellulitis (*Phlegmon of the Orbit*).—*Characteristics*.—There is hyperemia and edema of the lids and chemosis of the conjunctiva.

Chief Signs.—See page 67.

Maxillary Sinusitis (*Antritis; Empyema of the Antrum of Highmore*).—*Characteristics*.—There may be marked edema of the lids and chemosis of the conjunctiva.

Chief Signs.—See page 53.

Iritis.—*Characteristics*.—In severe cases there may be distention of the posterior conjunctival vessels, and slight chemosis of the conjunctiva.

Chief Signs.—See page 75.

Acute Contagious Conjunctivitis (*"Pink-Eye"*).—*Characteristics*.—Sometimes the bulbar conjunctiva is chemotic, always brightly injected.

Chief Signs.—See page 74.

Less Common Causes.—Conjunctivitis (all severe acute forms); ophthalmia neonatorum; sphenoidal sinusitis; cavernous sinus thrombosis; angioneurotic edema; paralysis of the external rectus (overlying the conjunctiva); iodism; urticaria; mumps; nephritis.

OPAQUE, HAZY, OR STEAMY CORNEA

Interstitial or Parenchymatous Keratitis.—*Characteristics*.—One or more grayish spots of infiltration appear on the cornea, either centrally or peripherally, and spread over the cornea, involving the entire area. The surface of the cornea is then steamy and resembles ground glass. Deep-seated blood-vessels appear and invade the cornea. The condition is usually bilateral.

Chief Signs.—Occurrence between five and fifteen years in congenital syphilitics; photophobia, lacrimation, pain, and interference with vision; duration, several months, with clearing up of the infiltration, sometimes followed by posterior synechiæ, changes in the iris and choroid, opacities of the vitreous, occlusion of the pupil, opacity.

Phlyctenular Keratitis.—*Characteristics*.—One or more small grayish nodules appear on the cornea, which break down, forming superficial ulcers.

Chief Signs.—Occurrence in scrofulous and poorly nourished children; local congestion, photophobia, and blepharospasm; healing with or without scar formation.

Ulcer of the Cornea.—*Characteristics*.—An ulcer begins with a dull, grayish or grayish-yellow infiltration of a circumscribed portion of the cornea; suppuration takes place, with loss of substance. There is nearly always grayish infiltration of the cornea surrounding the ulcer, and considerable ciliary injection.

Chief Signs.—Pain, photophobia, lacrimation, and blepharospasm; green staining of the ulcer with fluorescein (2 per cent); may be inflammation of neighboring structures; may be hypopyon; may be perforation, healing with opacity, bulging of the cornea.

For forms of Ulcers of the Cornea, see page 81.

Acute Glaucoma.—*Characteristics*.—The cornea is clouded or steamy due to edema, often presents punctate opacities, and is insensitive. There is pronounced circumcorneal injection of a dark red color, and the episcleral veins are prominent.

Chief Signs.—Prodromal stage of foggy vision; acute onset with rapid failure of the sight, severe pain in the eye, and headache; lids swollen and edematous; chemosis of the conjunctiva; shallow anterior chamber; pupil dilated, oval, and

immobile; iris congested, discolored, and dull; clouding of the media; increased tension.

Acute Iritis (*Iridocyclitis*).—*Characteristics*.—There may be a dustlike deposit on Descemet's membrane (*keratitis punctata*). In suppurative iridocyclitis the cornea is cloudy.

Chief Signs.—See page 75.

Cicatrization of Corneal Ulcers.—*Characteristics*.—According to its density, the corneal opacity resulting from ulceration is called nebular, when faint and cloudlike; macular, when appreciable as a gray spot; and leukoma, when dense and white. When the iris is attached to the scar tissue, the condition is spoken of as adherent leukoma, the result of anterior synechia. There may be considerable visual disturbance.

For causes of Ulcers of the Cornea, see below.

Less Common Causes.—Lagophthalmic keratitis; neuromyolytic keratitis; keratomalacia; vesicular keratitis (*herpes corneæ*); superficial punctate keratitis; keratitis profunda; sclerosing keratitis; band-shaped keratitis.

SYMPTOMATIC KERATITIS

Congenital Syphilis (*Hereditary Syphilis*).—*Characteristics*.—In the later stages, interstitial keratitis is apt to occur.

Chief Signs.—See page 39.

Cerebrospinal Meningitis.—*Characteristics*.—If the Gasserian ganglion is affected, or there is neuritis of the fifth cranial nerve, trophic changes occur in the cornea, and keratitis may follow with ulceration.

Chief Signs.—See page 8.

Tuberculous Cervical Adenitis (*Scrofula*).—*Characteristics*.—Phlyctenular keratitis and conjunctivitis are very common.

Chief Signs.—See page 284.

Less Common Causes.—Measles; malaria; rickets; diabetes; exophthalmic goiter; scarlet fever; pneumonia; typhoid fever; chickenpox; smallpox; typhus fever; leprosy; cholera; trigeminal paralysis; tumor of the orbit; starvation.

ULCERS OF THE CORNEA

Ulcers of the cornea are usually found in adult and aged individuals, phlyctenular ulcers being the only ones common in children. They occur often in individuals in whom the general health is poor. There are several clinical forms: simple or catarrhal, purulent or deep, transparent or indolent, infected or sloughing, marginal or annular, rodent or creeping (*Mooren's ulcer*), herpetic, dendritic, atheromatous, etc.

Trauma.—*Characteristics*.—The ulcer is usually simple. This form is small and superficial, with symptoms of slight or severe irritation, no tendency to perforation, and terminating in uncomplicated healing.

Chief Signs.—History of corneal injury (scratch, foreign body, misplaced cilia, operation).

Gonorrheal Ophthalmia (*Adult Purulent Conjunctivitis*).—*Characteristics*.—

Corneal ulceration is a frequent and important complication. This begins with a circumscribed grayish infiltration, becoming yellow and breaking down. The ulcers vary in situation, size and course. They may be central or marginal; the latter may be confluent, so as to form an annular ulcer. The ulcers may perforate, causing adherent leukoma, staphyloma, and other sequelæ.

Chief Signs.—See page 75.

Trachoma (*Granular Conjunctivitis*).—*Characteristics.*—Ulcers of the cornea occur with or without pannus, and are usually near the center of the cornea. They heal leaving opacities. Occasionally the ulcer is dendritic (a long central stem with long linear ramifications).

Chief Signs.—See page 75.

Phlyctenular Keratitis.—*Characteristics.*—Ulceration takes place in the grayish nodules. The infiltrations and subsequent ulcers are usually superficial and heal, as a rule, without permanent opacities.

Chief Signs.—See page 80.

Acute Catarrhal Conjunctivitis (*Acute Simple Conjunctivitis*).—*Characteristics.*—In severe cases small, grayish infiltrations (catarrhal ulcers) may form at the corneal margin. The coalescence of a number of these may form a marginal ulcer, which is usually unimportant, superficial, and heals readily, but occasionally becomes deep and serious.

Chief Signs.—See page 74.

Less Common Causes.—Chronic catarrhal conjunctivitis; ophthalmia neonatorum; diphtheritic conjunctivitis; dacryocystitis; glaucoma; variola; measles; chickenpox; pneumonia; scarlet fever; tuberculosis; typhoid fever; cholera; malaria; keratomalacia; trigeminal paralysis; tularemia.

PROTRUSION OF THE CORNEA

Staphyloma of the Cornea.—*Characteristics.*—This is a bulging cicatrix, lined by prolapsed iris, a sequela of perforation or corneal ulcer. It may involve the whole or only part of the cornea. In shape it may be globular, conical, or lobulated. Its color is whitish with bluish areas, or it may be all white or all blue.

Chief Signs.—History of corneal ulcer with perforation; increased tension; reduction of vision or blindness.

Keratectasia.—*Characteristics.*—This is a protrusion of the cornea following inflammation of the cornea without perforation; the bulging portion is opaque.

Chief Signs.—History of corneal ulcer, pannus, or interstitial keratitis; marked reduction of vision.

Keratoconus (*Conical Cornea*).—*Characteristics.*—A non-inflammatory conical protrusion of the center of the cornea, due to a gradual atrophic thinning, exists, in consequence of which the cornea is unable to resist the normal intra-ocular pressure.

Chief Signs.—Bilaterality; development in young adults; detection by lateral examination, or by the shadow test if slight; distortion of the fundus picture; may be progressive for years, then stand still; may be slight opacities at the apex; disturbance of vision.

Keratoglobus.—*Characteristics.*—This a globular protrusion and enlargement

of the cornea, and is usually one of the manifestations of congenital glaucoma.

Chief Signs.—Occurrence in early childhood; bilaterality; increase of intra-ocular tension; dilated pupils; atrophied and tremulous iris; thinned and bluish sclera; deeply excavated disk; reduction of vision which may progress to blindness.

ARCUS SENILIS

The true arcus is an ill-defined, grayish, partial or complete ring at the circumference of the cornea, the cornea itself being somewhat hazy. The false arcus is a sharply delineated ring of a clear yellow or yellowish-white color, due to a deposit of fat.

Senility.—*Characteristics.*—Arcus occurs sooner or later, sometimes even in young individuals.

Chief Signs.—Advanced years; dryness of the skin; emaciation; thinning and grayness of the hair; impaired vision and hearing; hardened arteries; general feebleness.

Arteriosclerosis.—*Characteristics.*—The arcus senilis when present, is an indication of beginning or well-marked atheromatous degeneration.

Chief Signs.—See page 9.

Less Common Causes.—Chronic nephritis; fatty heart; gout.

ABOLITION OF THE CORNEO-CONJUNCTIVAL REFLEX

Normally the eyelids should wink when the cornea or the conjunctiva are touched. In states of coma the reflex is absent.

Neurosis (“*Hysteria*”).—*Characteristics.*—The corneal reflex may be diminished, but if tested by blowing upon the eye of the anesthetic side both eyes blink. This is often associated with diminution or loss of the pharyngeal or palatal reflex.

Chief Signs.—See page 40.

Acute Glaucoma.—*Characteristics.*—In the active stage, the cornea is clouded or steamy and is insensitive from pressure upon the nerve filaments by edema.

Chief Signs.—See page 85.

Facial Paralysis.—*Characteristics.*—The reflex is abolished, except in central paralysis, and the regular involuntary blinking of health no longer occurs on the paralyzed side.

For causes of Facial Paralysis, see page 47.

Less Common Causes.—“*Neurasthenia*”; diabetes; exophthalmic goiter; herpes facialis; hemiplegia (affected side); cerebrospinal meningitis; trigeminal paralysis; tuberculous meningitis (paralytic stage); bromism.

PEARLY SCLERA

In all cases of anemia, whether primary or secondary, the scleræ are pearly white or bluish and covered by pale pink conjunctivæ. The eyes may have a peculiar brilliancy, especially in chlorosis.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics*.—The whites of the eyes may be abnormally bright and glistening.

Chief Signs.—See page 40.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics*.—In advanced cases the scleræ are pearly, the eyes have a peculiar luster, the pupils are dilated, and the appearance is one of appealing.

Chief Signs.—See page 31.

Chronic Parenchymatous Nephritis.—*Characteristics*.—The scleræ are usually bluish and pearly, due to the associated anemia.

Chief Signs.—See page 50.

Nephrosis.—*Characteristics*.—The skin and scleræ present a clear bluish-white color in spite of the fact that anemia may not exist.

Chief Signs.—See page 50.

Less Common Causes.—Addison's disease.

BLACK OR SLATY SCLERA

Ochronosis.—*Characteristics*.—There may be symmetrical black patches on the sclerotics.

Chief Signs.—Congenital when due to alkaptonuria, sometimes familial; history of prolonged use of carbolic acid on ulcers when acquired; bluish-gray discoloration about the knuckles and tendons of the hands and feet, cartilages of the ears, and widespread pigmentation of the skin; no impairment of health; alkaptonuria or carboluria.

BRIGHT BLUE SCLERA

Osteogenesis Imperfecta (*Fragilitas Ossium*).—*Characteristics*.—The scleræ are bright blue.

Chief Signs.—Familial history; presence at birth or in fetal life; marked fragility of all of the bones; may be bent and deformed extremities; defective development of the cranium; nerve deafness.

THE EYEBALLS

SYMPTOMS	PAGE
Pain in the Eyeballs	85
Fixed or Immobile Eyeballs (The eyes do not move in any direction.)...	86
Squint or Strabismus	87
Conjugate Deviation (The head and eyes are turned to the side).....	91
Nystagmus (Oscillation of the Eyeballs).....	92
Exophthalmos (Proptosis)	95
Enophthalmos (Sunken Eyeballs)	97

PAIN IN THE EYEBALLS

(See also "Photophobia," page 116.)

Eye-Strain (*Errors of Refraction; Muscle Imbalance*).—*Characteristics*.—Pain, fatigue, and discomfort referred to the eyes or above the eyes is common, even in minor degrees of hyperopia or astigmatism, after the use of the eyes. With advancing years presbyopia is also a common cause of this complaint. In muscular asthenopia, there is also pain, often over the insertion of the affected muscle, and especially marked when the eye is suddenly moved in the direction of its action. These symptoms are regularly worse at night when the patient is tired, or when artificial illumination is employed.

Chief Signs.—Pain in the eyes and headache, aggravated by use and close work; fatigue after use of the eyes, drowsiness; lacrimation, photophobia, congestion, itching and burning; vertigo; reflex symptoms (nausea, facial spasm, migraine); ocular examination (revealing error of refraction, especially astigmatism and hyperopia, or muscular imbalance); relief after rest or correction of the error.

Conjunctivitis (*In General*).—*Characteristics*.—Various sensations akin to pain occur according to the form and severity of the inflammation, such as burning, smarting, heaviness, and a sensation as of a foreign body in the eye.

For various forms of Conjunctivitis, see page 74.

Keratitis (*In General*).—*Characteristics*.—Pain is a frequent subjective symptom, accompanied by photophobia, blepharospasm, lacrimation, and interference with vision.

Chief Signs.—See page 80.

Ulcer of the Cornea.—*Characteristics*.—Pain may be severe, slight, or even absent.

Chief Signs.—See page 80.

Trauma of the Eye.—*Characteristics*.—Wounds and burns of the eye are very painful.

Foreign Body in the Eye.—*Characteristics*.—There is severe pain and irritation, quickly relieved by the removal of the cause.

Iritis.—*Characteristics*.—The pain is often severe, referred to the eyeball itself, radiating to the forehead and temple, and worse at night. It is sometimes accompanied by tenderness of the eyeball, a symptom pointing to involvement of the ciliary body.

Chief Signs.—Pain; photophobia; lacrimation; interference with vision; the iris swollen, dull, lusterless, and muddy; the pupil contracted, sluggish, grayish, irregular in outline; turbidity of the aqueous humor; may be a dustlike deposit on Descemet's membrane.

Acute Glaucoma.—*Characteristics*.—There is severe pain in the eye, radiating along the branches of the fifth nerve and causing violent headache. It is sometimes so intense as to occasion nausea, vomiting, general depression, and febrile disturbance.

Chief Signs.—Prodromal stage of foggy vision; acute onset with rapid failure of sight, severe pain in the eye, and headache; the lids swollen and edematous; chemosis of the conjunctiva; shallow anterior chamber; the pupil dilated, oval,

immobile; the iris congested, discolored, and dull; clouding of the media; increased tension.

Suppurative Iridochoroiditis (*and Panophthalmitis*).—*Characteristics*.—There is severe pain in the affected eye.

Chief Signs.—See page 79.

Acute Retrobulbar Neuritis.—*Characteristics*.—Pain is felt in the affected orbit, and is aggravated by movements of the eye, and upon pressing the eye backward. It is accompanied by severe unilateral headache.

Chief Signs.—Rapid impairment of sight, beginning in the center of the field and progressing in the course of a week to partial or complete blindness; absence of external signs; ophthalmoscopy (hyperemia of the disk with haziness of the margins and distention of the retinal vessels); usually recovery.

Orbital Cellulitis (*Orbital Phlegmon*).—*Characteristics*.—There is violent pain in the orbit, increased by pressure upon the eyeball.

Chief Signs.—See page 67.

Sphenoidal Sinusitis.—*Characteristics*.—Deep-seated pain behind the eyes and asthenopia are often complained of.

Chief Signs.—See page 7.

Influenza (*La Grippe*).—*Characteristics*.—There is usually complaint of pain in the eyes, referred rather to the backs of the eyes than to the eyes themselves. Movement of the eyes is painful.

Chief Signs.—Acute onset with severe headache and pain in the back and limbs; chills and sweats; fever, lasting from three to five days; bronchitis with scattered râles in the lungs.

Migraine (*Hemicrania*).—*Characteristics*.—The headache may begin as pain in the eyeballs, or in the temple or forehead, but gradually spreads to involve the entire side of the head.

Chief Signs.—See page 6.

Less Common Causes.—Trigeminal neuralgia; coryza; tabes dorsalis; orbital periostitis; herpes; entropion; measles; typhoid fever; smallpox; secondary syphilis; malaria; typhus fever.

FIXED OR IMMOBILE EYEBALLS

(*The eyes do not move in any direction.*)

There may be merely a temporary fixation of the eyeballs due to spasm; a more or less permanent immobility due to simultaneous affection of the third, fourth, and sixth cranial nerves (ophthalmoplegia), which is rare; or a fixation due to some mechanical factor.

Major Epilepsy.—*Characteristics*.—The eyes are often fixed and staring during the aural period of grand mal.

Chief Signs.—See page 684.

Minor Epilepsy (*Petit Mal*).—*Characteristics*.—The minor fit may take the form of sudden cessation of current activities, fixation of the eyes, and slight pallor of the face.

Chief Signs.—See page 36.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics*.—Occasionally all of the muscles of the eye are paralyzed, often only transiently.

Chief Signs.—See page 89.

Bulbar Paralysis.—*Characteristics*.—In some cases the disease affects the upper cranial nerve nuclei as well as the lower (usually the fifth, seventh, eleventh, and twelfth), giving rise to a chronic ophthalmoplegia, often limited to the external muscles of the eye, but sometimes affecting the pupillary muscles as well.

Chief Signs.—See page 43.

Cavernous Sinus Thrombosis.—*Characteristics*.—There is a gradual involvement of the third, fourth, and sixth cranial nerves as they course through the sinus, causing partial and later complete ophthalmoplegia.

Chief Signs.—See page 96.

Symblepharon.—*Characteristics*.—The adhesion of the eyelid to the eyeball may be so extensive as to practically fix the eye.

Chief Signs.—See page 72.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics*.—The protruding, staring eyeballs merely appear to be fixed.

Chief Signs.—See page 95.

Encephalitis Lethargica (*Epidemic Encephalitis*).—*Characteristics*.—In some cases all of the nerves innervating the external ocular muscles (third, fourth, and sixth) are affected, causing ophthalmoplegia, usually associated with other nerve palsies.

Chief Signs.—See page 62.

Ophthalmoplegia Externa.—*Characteristics*.—In this rare affection there is a chronic degeneration of the nuclei of the third, fourth, and sixth cranial nerves, causing a paralysis of the external ocular muscles. The course is slow, chronic, bilateral, usually commences with ptosis, and may progress to complete immobility of the eyeballs.

Chronic Progressive Ophthalmoplegia (*Ophthalmoplegia Totalis*).—*Characteristics*.—Rarely a progressive degeneration of the oculomotor nuclei may result in complete immobility of the eyeballs with loss of pupillary action. Bulbar paralysis may also develop.

Less Common Causes.—Basal meningitis (syphilitic); cerebral tumor; general paresis; multiple neuritis; "neurasthenia" (transient); progressive muscular atrophy; encephalitis; orbital abscess; orbital tumor; hemorrhage; tenonitis; myasthenia gravis; Korsakoff's syndrome (as regards upward or downward motion).

SQUINT OR STRABISMUS

Squints are classified, according to their direction, into convergent, divergent, and altitudinal; and according to their cause, into paralytic and non-paralytic (concomitant). The diagnosis between paralytic and non-paralytic strabismus is usually easy. In the former, the convergence or divergence of the eyes is not constant in amount in all directions, as the farther the eyes are moved into the direction of the line of action of the paralyzed muscle the greater will be the deviation from parallelism; in fact, the squint may only be evident when the patient looks in the direction of the paralyzed muscle; diplopia is usually present. In a concomitant

squint, the eyes always bear the same relative position to each other in whatever direction they are turned, and the squint may be periodic or constant; the visual image is single.

Hyperopia (*Far-Sightedness*).—*Characteristics*.—This condition is generally associated with an internal or convergent squint, especially in early childhood in a patient whose fusion sense is deficient. In high degrees there may be an apparent external squint.

Chief Signs.—Congenital and often hereditary; may be asthenopia (headache, pain, congestion, blurring of vision); far-sight good, near-sight bad; spasm of accommodation; subjective test with test types and test lenses; ophthalmoscopy and retinoscopy.

Myopia (*Near-Sightedness*).—*Characteristics*.—In high degrees there may be a convergent squint, but if the effort to converge is given up divergent squint results.

Chief Signs.—May be an hereditary tendency; acquisition at an early age in excessively and improperly used eyes; indistinct vision for distance; asthenopia; sluggish facies; prominence of the eyeballs; deep anterior chamber; dilated pupils; subjective test with test types and test lenses; ophthalmoscopy (crescent) and ophthalmoscopic tests; retinoscopy.

Anisometropia (*Marked Inequality of Refraction*).—*Characteristics*.—In high degrees concomitant squint often develops.

Chief Signs.—Asthenopia; examination and comparison of refraction in the two eyes.

Imperfect Vision in One Eye (*Congenital Amblyopia; Opacities of the Cornea or Lens; Intra-ocular Disease*).—*Characteristics*.—There is usually a concomitant strabismus.

Chief Signs.—Ocular examination and symptoms due to the primary condition.

Heterophoria (*Muscle Imbalance*).—*Characteristics*.—The eyes have a constant tendency to deviate, but are usually forced into simultaneous fixation of an object by special exertion. If this effort were not made, there would be a slight deviation and double images. When one eye is covered, the eye will deviate, its direction representing the position of rest. Sometimes the patient complains of one eye turning in or out.

Chief Signs.—Asthenopia (headache, various neuralgias, pain in the eyes, mental dullness, indistinct or blurred vision, diplopia, vertigo, irritable condition of the lids); candle flame, black spot, and other tests for muscle insufficiency.

Cerebral Syphilis (*Basal Meningitis*).—*Characteristics*.—This disease is the cause of almost one-half of the cases of paralytic strabismus. The third nerve is most commonly affected, usually partially, with paralysis of single muscles, often accompanied by ptosis and pupillary changes. The sixth nerve is also commonly affected, usually unilaterally; this causes paralysis of the external rectus, and is easily recognized by the inability to turn the eye outwards beyond the midpoint, diplopia and squint resulting on attempting this movement. The fourth nerve, controlling the superior oblique, is less frequently affected; squint and diplopia develop on looking outwards and downwards. To detect paralysis of the ocular muscles, the patient is made to follow the examiner's finger with his eyes, as he moves it alternately, up, down, to the right, and to the left, and from a distant point toward the patient's nose (convergence).

Chief Sign.—History of syphilis (two to five years before); mental symptoms (from fretfulness to dementia); insomnia; attacks of somnolence; vertigo; cranial nerve palsies (especially the second, third, and sixth); may be epileptiform attacks, transient aphasia or paralysis; positive Wassermann; spinal fluid (positive Wassermann, lymphocytosis, increased globulin, colloidal gold reaction, luetic curve).

Tuberculous Meningitis (*Basilar Meningitis*).—*Characteristics.*—Paralysis of one or other ocular muscles is common and may result in diplopia with paralytic squint. In the first stage (irritation period) slight squint is often present, with photophobia and contracted pupils. In the second stage (that of increasing intracranial pressure) the pupils are dilated or unequal with altered light reaction; there is squint, incoördination of the ocular movements, ptosis, and early optic neuritis.

Chief Signs.—Insidious onset, change of disposition, irregular pulse and fever, signs of meningeal irritation; palsies; coma; discovery of a tuberculous focus; spinal fluid (lymphocytosis, tubercle bacilli, increased pressure).

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—Temporary paralysis or paresis of an external ocular muscle is not uncommon in the early stages. Permanent paralysis or paresis of one sixth nerve or one third nerve is frequently observed. Temporary paralysis of the third nerve always results in a permanent loss of the pupillary light-reflex. Ptosis, unilateral or bilateral, is the earliest and most common ocular sign.

Chief Signs.—History of syphilis (six to fifteen years previous); lightning pains; absence of the knee-jerks; Argyll-Robertson pupils; Romberg's sign; later ataxic gait; sensory changes; trophic lesions; hypotonia; visceral crises; difficulty in micturition; optic atrophy; ocular palsies; positive Wassermann; spinal fluid examination (positive Wassermann, increased globulin, lymphocytosis, colloidal gold tabetic curve).

Cerebrospinal Meningitis (*Cerebrospinal Fever*).—*Characteristics.*—Strabismus is a frequent and important symptom.

Chief Signs.—Acute onset, high fever, delirium; vomiting; convulsions; retraction of the head and neck; Kernig's and Brudzinski's signs positive; lumbar puncture (cloudiness, pleocytosis, presence of the meningococcus).

Cerebral Tumor.—*Characteristics.*—Tumor of the corpora quadrigemina is localized with comparative ease by the combination of bilateral ptosis with weakness of the upward and downward movements of the eyes and feebleness of convergence. In tumor of the crus, Weber's syndrome gives a typical picture, consisting in third nerve palsy, generally incomplete on the side of the lesion, with hemiplegia on the opposite side (face, arm, and leg). If a growth of the pituitary gland presses backwards upon the third nerves, ocular palsies result. In tumor of the pons, involvement of the sixth nerve nucleus causes conjugate deviation (see page 92); if this nerve is involved below its nucleus, the external rectus only is involved, without conjugate deviation. The external rectus may also be paralyzed by a tumor of the cerebello-pontine angle. A tumor arising from the base of the skull in the anterior fossa affects the nerves of the eyes, causing blindness and ocular paralysis; when arising in the posterior fossa, the sixth nerve may be involved, while a growth in the middle fossa may also affect the ocular nerves.

Chief Signs.—Vomiting, often early and constant (especially in cerebellar and

pontine growths), not related to food, unaccompanied by nausea, and may be projectile; optic neuritis (choked disk, papillitis) usually bilateral; vertigo; may be mental or emotional changes; may be convulsions; slow pulse; localizing symptoms; x-ray.

Pontine Hemorrhage.—*Characteristics.*—When in the lower portion of the pons, there is crossed paralysis with conjugate deviation away from the lesion.

Chief Signs.—See page 92.

Encephalitis Lethargica (*Epidemic Encephalitis*).—*Characteristics.*—Strabismus is one of the most common symptoms, the third nerve being the most commonly affected, and often exclusively. The squint is often accompanied by inequality of the pupils and ptosis. The sixth nerve may be paralyzed. The ocular disturbances are frequently bilateral, the paresis usually partial (involving more than one or only part of one neuromuscular group), and the palsies have a tendency to alteration, in some instances from day to day.

Chief Signs.—Sudden onset with slight nasal discharge, fever, and sweating, followed in a day or two by restlessness, anorexia, constipation, and vomiting, and possibly nocturnal delirium, subsiding in three to fourteen days followed by abnormal drowsiness; the drowsiness passing in a week into lethargy or stupor; appearance of ptosis with other cranial nerve palsies; diplopia; may be meningeal symptoms; muscular hypertonia or rigidity; coarse tremor; choreo-athetoid movements; emotionalism; whispering monotonous speech or dysarthria; may be paralysis; psychotic manifestations; moderate leukocytosis (9000 or higher); spinal fluid normal or slightly altered.

Cerebellar Tumor.—*Characteristics.*—There is frequently a slight paresis of the external rectus muscle on the side of the lesion. Occasionally some weakness or conjugate deviation toward the side of the lesion is observed. In cases with optic atrophy, the eyes when at rest are usually deviated toward the sound side. In some cases, after acute attacks of vomiting and headache, the eye on the side of the lesion may be directed downward and inward, and the other upward and outward ("skew deviation").

Chief Signs.—Vomiting; vertigo; optic neuritis; reeling and lurching gait with a tendency to fall to the side of the lesion (asynergia); dysmetria; dysdiadochokinesis; may be tilting of the head to the side of the lesion; may be nystagmus; progressive course.

Postdiphtheritic Paralysis.—*Characteristics.*—Next to paralysis of the palate the most common involvement is paralysis of the eye muscles, intrinsic and extrinsic. There may be strabismus, ptosis, and loss of power of accommodation. The strabismus is perhaps due most often to paralysis of the sixth cranial nerve.

Chief Signs.—History of diphtheria two to three weeks previous; may be palatal paralysis (nasal tone of voice, regurgitation, dysphagia); may be multiple neuritis; insular sclerosis.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics.*—Weakness of the internal recti sometimes occurs constituting Möbius' sign. If the patient is asked to look upward to the ceiling and then at the tip of his nose, one eye only converges, the other eye becoming divergent.

Chief Signs.—See page 95.

Ophthalmoplegic Migraine (*Recurrent Oculomotor Paralysis*).—*Character-*

istics.—Sometimes transient ocular palsy affects the third nerve in whole or in part, recurring in the same eye without apparent cause at intervals of weeks or months, and clearing up completely between the attacks. There is usually ptosis, strabismus, and mydriasis.

Chief Signs.—Violent unilateral headache; nausea; vomiting; slight fever.

Neurosis ("Hysteria").—*Characteristics*.—A condition known as convergent cramp or spasm is sometimes seen and is characterized by convergent squint, limitation of the mobility of the external recti, and by homonymous diplopia.

Chief Signs.—See page 40.

Less Common Causes.—Cerebral hemorrhage; facial paralysis (basal); bulbar paralysis; hydrocephalus; cerebral abscess; acute ascending paralysis; meningitis; facial hemiatrophy; oxycephaly (divergent); pertussis; trigeminal neuralgia; syringomyelia; diabetes; rheumatism; gout; influenza; congenital paralysis; orbital cellulitis; orbital periostitis; orbital tumor; orbital hemorrhage; fracture of the orbit; frontal sinusitis; ethmoiditis; sphenoidal sinusitis; maxillary sinusitis; general paresis; herpes zoster; multiple neuritis (lead, alcohol); poisoning by gelsemium, conium, chloral, carbonic acid; meat poisoning; botulism; myasthenia gravis; multiple sclerosis.

CONJUGATE DEVIATION

(The head and eyes are turned to the side.)

The eyes are directed to the side and cannot be voluntarily moved in an opposite direction; yet if the eyes are fixed upon an object and the head turned in a direction away from the lesion, the eyes will turn in a direction which voluntarily is impossible.

Apoplexy (*Cerebral Hemorrhage*).—*Characteristics*.—In the apoplectic stroke, the head and eyes may be turned strongly toward the side of the hemorrhage, that is, away from the paralyzed side. When, however, convulsions or spasms occur or the state of so-called early rigidity in hemiplegia, the conjugate deviation may be in the opposite direction, that is, the eyes look away from the lesion and the head is rotated toward the convulsed side.

Chief Signs.—Age rarely under forty; may be premonitory symptoms (numbness and tingling, headache, giddiness or vomiting, epistaxis, visual or mental disturbances); gradual or sudden development of paralysis and coma; may be signs of arteriosclerosis and hypertension; stertorous respiration; cyanotic facies; spluttering lips; flapping of the cheeks; pupils inactive, usually dilated or unequal; pulse slow, full, and incompressible; temperature normal or subnormal; reflexes absent; incontinence of urine and feces; later rigidity, increased reflexes, plantar extension, ankle clonus; residual hemiplegia; speech disturbances.

Major Epilepsy.—*Characteristics*.—During the convulsion the head and eyes are deviated to one side and the body may be rotated to the same side. In prolonged fits the intensity of the spasm may pass from the more to the less affected side, so that the head and eyes may be deviated to the other side.

Chief Signs.—See page 46.

Minor Epilepsy (*Petit Mal*).—*Characteristics*.—The minor fit may take the

form of deviation of the eyes to one side with a cry, or there may be sudden pallor with deviation of the head and a fall.

Chief Signs.—See page 36.

Encephalitis Lethargica (*Epidemic Encephalitis*).—*Characteristics.*—Conjugate deviation and limitation of the voluntary movement of the eyes in a horizontal or vertical plane may be present.

Chief Signs.—See page 90.

Pontine Hemorrhage.—*Characteristics.*—The deviation is the reverse of that which occurs in ordinary apoplexy; that is, the patient looks away from the lesion, and in spasm or convulsion toward the lesion.

Chief Signs.—Sudden and profound loss of consciousness (if the hemorrhage is large); may be vomiting and convulsions, usually bilateral; complete flaccid paralysis with abolition of reflexes; pin-point pupils; hyperpyrexia; irregular respiration; death.

Tumor of the Pons.—*Characteristics.*—Bilateral paralysis of conjugate movement is a common symptom, due to involvement of the nucleus of the sixth nerve.

Chief Signs.—Those of cerebral tumor in general: headache, vomiting, choked disk, but all very late; “crossed” paralysis (fifth, sixth, or seventh nerve on the side of the tumor, with hemiplegia of the arm and leg on the opposite side); may be hemianesthesia on the opposite side.

Tumor of the Frontal Lobe (*Postfrontal Area*).—*Characteristics.*—Epileptiform fits occur without premonitory auræ, which commence with turning or jerking of the head and eyes to the opposite side. These may be the only movements which occur, or the spasm may spread to the face and mouth, arm, leg, and trunk (Jacksonian epilepsy). Consciousness is often not lost. After severe seizures, the head and eyes are in paralytic deviation to the side of the lesion. These convulsions are not followed by persistent motor phenomena.

Chief Signs.—Localized headache; vertigo; vomiting; early optic neuritis and even blindness; mental disturbances and moria (important); absence or diminution of the superficial abdominal reflexes on the side opposite the lesion with extensor plantar reflex; may be cranial bulging and exophthalmos.

Less Common Causes.—Cerebral abscess; cerebellar tumor; simultaneous thrombosis of the longitudinal and transverse sinuses; tuberculous meningitis; “hysteria.”

NYSTAGMUS

(*Oscillation of the Eyeballs*)

Nystagmus is a condition in which on conjugate movements of the eyes, the ocular deviation is poorly sustained, and is affected by a succession of slow or quick, coarse or fine, rotary or oscillatory movements of varying range. There are three varieties: (1) searching movements; (2) pseudonystagmus; and (3) nystagmus proper. 1. Wide, purposeful, and slow movements of the eyes in all directions are usually seen in people who are born blind or have lost the power of fixation as the result of some obstruction of the retina or choroid at the yellow spot. The eyes seem to be searching for something but never rest on any definite object. 2. Pseudonystagmus is applied to rapid, jerking movements of the eyes when they are carried

to the extremity of an excursion in any direction. The eyes instead of remaining fixed on the object, rapidly recede from their position and return to it at the rate of four or five oscillations a second. 3. Nystagmus proper is applied to a condition in which the eyes make rapid regular oscillations about a fixed point, vertical, horizontal, or rotatory, not only at the extremity of an excursion, but when the eyes are otherwise at rest, and looking directly forward. This is usually bilateral.

Nystagmus occurs in healthy persons who are rotated rapidly and may also be induced by syringing the ear with hot or cold water. An undulating nystagmus may occur after severe fatigue and in certain wasting diseases. It may also appear after convulsions or with attacks of vertigo. At times it is congenital.

Epilepsy.—*Characteristics.*—When the tonic stage of the spasm changes to the clonic, the eyes, which during the tonic stage have been drawn to one side, show rapid clonic jerks to that side.

Chief Signs.—See page 46.

Purulent Labyrinthitis.—*Characteristics.*—The nystagmus is known as aural or vestibular nystagmus. Nystagmus is one of the three principal symptoms directly referable to interference in the function of the vestibular apparatus. It is rhythmic and consists of two components, a slow vestibular component, and a rapid cortical movement in the opposite direction. When great in amount, vestibular nystagmus can be observed in any position of the eye, but when small in amount it can only be elicited in extreme abduction in the direction of the quick component. Various tests (rotation, caloric, fistula, galvanic) are employed to determine the presence and location of labyrinthine disease.

Chief Signs.—History of purulent otitis media; acute onset; fever; pain; nausea and vomiting; tinnitus aurum; impairment of hearing; vertigo; ataxia; may be facial paralysis.

Circumscribed Labyrinthitis.—*Characteristics.*—There may be spontaneous nystagmus.

Chief Signs.—Vertigo or disequilibrium of sudden onset and often transient duration brought on by stooping, straining, or moving the head rapidly; normal labyrinth reactions on rotation and caloric tests.

Diffuse Serous Labyrinthitis.—*Characteristics.*—There is spontaneous nystagmus and the patient is disposed to lie on the sound side so that the eyes may be directed toward the slow component of the nystagmus.

Chief Signs.—May be history of an ear operation (radical mastoid, removal of polypus); great diminution of hearing; vertigo; usually reaction to turning and caloric test (as long as some function remains).

Ménière's Disease (*Acute Primary Labyrinthitis*).—*Characteristics.*—Nystagmoid movements may occur away from the affected side.

Chief Signs.—Acute onset; vertigo (the patient may fall); tinnitus aurum; nausea, pallor, cold sweat, and vomiting; may be collapse; deafness (becoming progressive); recurrence of paroxysms.

Miners' Nystagmus.—*Characteristics.*—The nystagmus is oscillating, generally vertical, and accompanied by spasm of the levatores palpebrarum.

Chief Signs.—Occupation involving ocular strain in dim light (mining); nervous exhaustion.

Cerebellar Tumor.—*Characteristics.*—Nystagmus is always present and is a

valuable localizing sign. In typical cases, it consists of slow and deliberate jerkings of both eyes on lateral conjugate movement to the side of the lesion; these are in marked contrast to the finer and more rapid movements, which take place on conjugate deviation to the side opposite. Nystagmus may also be present but less well marked on upward and downward movements of the globes, and consists of rotary upward and downward movement to the side of the lesion.

Chief Signs.—Vomiting; vertigo; optic neuritis; reeling and lurching gait with a tendency to fall to the side of the lesion (asynergia); dysmetria; dysdiadokokinesis; may be tilting of the head to the side of the lesion; may be nystagmus; progressive course.

Cerebellar Abscess.—*Characteristics.*—There is slow and large range nystagmus to the side of the abscess.

Chief Signs.—History of middle-ear disease; headache (occipital); persistent vomiting; choked disk; drowsiness and apathy; slow pulse and respiration; fever and chills if acute; leukocytosis; vertigo; reeling gait; retraction of the head with rigidity of the neck; ataxia and paresis on the side of the lesion; decubitus (on the opposite side with the face turned to the side of the lesion).

Encephalitis Lethargica (*Epidemic Encephalitis*).—*Characteristics.*—Nystagmus or nystagmoid movements are frequently seen. It is really more of a rhythmic nystagmoid movement on contraction of a paresed ocular muscle than a distinct nystagmus.

Chief Signs.—See page 90.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—Nystagmus, especially on lateral movement, is a very characteristic sign. Although commonly bilateral, it may be present on one side only. The movements may be fine or coarse, and are often quite irregular. In some cases it is absent, but in others it is spontaneous, especially when there is optic atrophy.

Chief Signs.—Onset between 15 and 30 years; marked remissions in symptoms; spastic paraplegia; increased deep reflexes with Babinski's sign; absent abdominal reflexes; transient amblyopia or diplopia; disturbances of the sphincters; numbness and tingling; emotionalism; intention tremor; scanning speech; optic atrophy and pallor of the temporal half of the disks (ophthalmoscopy).

Friedreich's Ataxia.—*Characteristics.*—Nystagmus is a common symptom, occurring in the form of slow nystagmoid jerkings in all directions.

Chief Signs.—Onset insidious; may be familial; clumsy and unsteady walking (swaying); ataxia of voluntary movements; early loss of the deep reflexes; altered speech (slurring and explosive); pes cavus; scoliosis; slow progressive course.

Spasmus Nutans.—*Characteristics.*—There is usually a fine, rapid nystagmus, which may be more marked in one eye than in the other. When the child's head is fixed the nystagmus increases.

Chief Signs.—Occurrence in rickety children during the second six months after birth; acute onset in winter-time; involuntary rotatory or nodding tremor of the head, ceasing when the eyes are closed; duration, six to eight weeks or longer; may recur the following winter.

Syringomyelia.—*Characteristics.*—Nystagmoid jerkings, or nystagmus on extreme lateral deviation, are present in a large number of cases.

Chief Signs.—Onset in early adult life, insidiously; may be initial symptoms of

tingling and pains, and absence of pain following burns, cuts, etc.; dissociated anesthesia, *viz.*, loss of pain and temperature senses with retention of touch in sharply defined areas of asymmetrical and irregular distribution; skin thin, glossy, and sweating; painless sudden swellings of the shoulder, elbow, or wrist joints; muscular atrophy and paralysis (lower motor neuron type) of the upper extremities; spastic paralysis; scoliosis; painless whitlows.

Albinism.—*Characteristics.*—Nystagmus is almost invariably present.

Chief Signs.—See page 73.

Paralytic Strabismus (*Squint*).—*Characteristics.*—When, during the period of recovery, the patient looks steadily in the direction of the formerly paralyzed muscle, slight rhythmic nystagmus may develop. If the external rectus has been paralyzed the movements are lateral; if the superior or inferior rectus, vertical; if an oblique muscle, rotary.

Chief Signs.—See page 87.

Less Common Causes.—Astigmatism; amaurotic family idiocy; botulism; bulbar paralysis; cerebral hemorrhage; cerebellar hemorrhage; tumor of the pineal body; tumor of the corpora quadrigemina; cerebrospinal meningitis; chorea; choroidal disease; retinal disease; corneal opacities; hereditary cerebellar ataxia; chronic hydrocephalus; “hysteria”; “neurasthenia”; idiocy; insanity; melancholia; tabes dorsalis; basal meningitis; microphthalmos; multiple neuritis; myasthenia gravis; tumor of the pons; occupation neurosis; optic atrophy; primary spastic paralysis; progressive muscular atrophy; lateral sinus thrombosis; cavernous sinus thrombosis; nystagmus myoclonus; congenital total color-blindness; congenital cataract; high myopia; ophthalmia neonatorum.

EXOPHTHALMOS

(*Proptosis*)

This condition may be unilateral or bilateral. Exophthalmos is sometimes congenital, and when so, usually has a familial tendency; it is especially common in the Negro race. At times it is due to general debility when the ocular muscles are weak.

Exophthalmic Goiter (*Graves’ Disease*).—*Characteristics.*—Exophthalmos, usually bilateral, but sometimes unilateral, is one of the cardinal symptoms of this disease. The protrusion may become very great and the eye may even be dislocated from its socket. The eyelids are retracted, exposing the sclera above and below the cornea (Dalrymple’s sign). When the eyeball is moved downward the upper lid does not follow it as in health but lags behind (Von Graefe’s sign). Stellwag’s sign refers to infrequency of winking, which is present. There is often inability of the eyeballs to properly converge (Möbius’ sign).

Chief Signs.—Onset gradual; occurrence usually in females (ten to one); enlargement of the thyroid; tachycardia and circulatory disturbances; tremor; nervousness; sweating; wasting; headache; anemia; may be toxic crises; increased basal metabolic rate.

High Myopia.—*Characteristics.*—The eyeballs are notably prominent and

elongated, with large and somewhat sluggish pupils. This is not a true exophthalmos, but is an increase in the anteroposterior diameter of the eyeballs due usually to pathological changes in the coats of the eye with elongation of the optic axis.

Chief Signs.—See page 88.

Cavernous Sinus Thrombosis.—*Characteristics.*—There is proptosis of one or both eyeballs according as one or both sinuses are affected.

Chief Signs.—Presence of infection of the face, nostrils, eyelids, sinuses, or ear; sudden onset; fever, rigors, sweats; headache; edema of the eyelids and root of the nose; chemosis; ocular palsy from involvement of the third, fourth, and sixth cranial nerves; corneal ulceration; may be optic neuritis.

Chronic Internal Hydrocephalus (*Congenital Hydrocephalus*).—*Characteristics.*—In severe cases the eyes protrude slightly and are rotated downward, leaving some of the sclera visible.

Chief Signs.—See page 13.

Orbital Cellulitis.—*Characteristics.*—There is unilateral or bilateral exophthalmos of slight or marked degree.

Chief Signs.—Chills and fever; deep-seated orbital pain; headache; later optic neuritis followed by atrophy; anesthesia and ulceration of the cornea; may be intra-ocular changes; finally fluctuation with pointing below the inner portion of the supra-orbital ridge.

Orbital Periostitis.—*Characteristics.*—If situated posteriorly there is sometimes exophthalmos, usually only in the acute form.

Chief Signs.—Pain in the orbit; tenderness on pressure; swelling of the lids and conjunctiva; hard immobile swelling if at the margin; may be fistula formation; may be optic neuritis; may be severe constitutional symptoms.

Orbital Tumor.—*Characteristics.*—A tumor within the cone of the recti muscles is apt to cause a forward displacement of the globe (unilateral), while one outside of this cone may displace the eyeball in some particular direction. Considerable proptosis may occur without causing the globe to protrude beyond the fissure of the lids.

Chief Signs.—Rapid or slow growth (malignant or benign tumor); limitation of movements; may be optic neuritis or retrobulbar neuritis and later atrophy; may be diplopia; pain usually late.

Orbital Aneurysm.—*Characteristics.*—Pulsating exophthalmos (unilateral) is present, most frequently with the eye displaced outward and downward.

Chief Signs.—Bruit heard over the eye and above the orbit; buzzing sound in the head; pulsation visible or demonstrable by pressing the globe inward; venous distention about the eye and forehead; disturbances of ocular motility; may be corneal ulcer, iritis, optic neuritis, choked disk.

Orbital Trauma (*Contusion, Penetrating Wound, Foreign Body, Fracture of the Orbit*).—*Characteristics.*—A prominent sign is hemorrhage into the orbit, causing exophthalmos and sometimes ecchymosis of the lids and conjunctiva.

Chief Signs.—History of injury; may be blindness, emphysema, dislocation of the eyeball, rupture of the globe.

Frontal Sinusitis.—*Characteristics.*—There may be protrusion of the eyeball downward and outward.

Chief Signs.—See page 4.

Ethmoiditis.—*Characteristics.*—The globe may be displaced downward and outward.

Chief Signs.—See page 5.

Tumor of the Frontal Lobe.—*Characteristics.*—Sometimes there is exophthalmos on the side of the tumor and localized bulging of the cranium.

Chief Signs.—See page 92.

Stimulation of the Cervical Sympathetic.—*Characteristics.*—Conditions which irritate the sympathetic nerves in the neck, such as lymphadenoma of the neck or aneurysm at the root of the neck, may be accompanied by exophthalmos on that side, with widening of the palpebral fissure, delayed descent of the upper lid when the patient looks downward, dilated pupil, and sweating of the face. The same effect may be produced by dropping a solution of cocain into the healthy eye.

Infantile Scurvy (*Barlow's Disease*).—*Characteristics.*—Ecchymosis of the orbit resulting in prominence of the eyeball is present in some cases.

Chief Signs.—See page 34.

Less Common Causes.—Tumor arising from the base of the skull (anterior fossa); tumor of the antrum of Highmore; apoplexy; maxillary sinusitis; rheumatoid arthritis; bronchial asthma (during the paroxysm); convulsions; dyspnea; vomiting; epilepsy (during the convulsion); cysts of the orbit; chloroma of the orbit; exostosis of the orbit; gumma of the orbit; hydatids of the orbit; tuberculous orbit; tumor of the optic nerve; varix of the orbit; paralysis of the third nerve; tenonitis; encephalocele; encephaloid cancer; meningocele; enlarged lacrimal gland; acute glaucoma; dislocation of the eyeball; glioma; intracranial growth; delirium tremens; intermittent exophthalmos; hypernephroma; cardiac hypertrophy; lymphadenoma; lymphatic leukemia; chronic nephritis; oxycephaly; scaphocephaly; leontiasis ossium; supra-adrenalism; thrombosis of the superior longitudinal sinus; enlarged thymus; hypertrophic interstitial neuritis; acromegaly; pituitary tumor; medullary lesion.

ENOPHTHALMOS

(*Sunken Eyeballs*)

This condition is most commonly seen in wasting diseases and severe diarrheas as a result of the absorption of the orbital fat, and the diagnosis as regards the eye presents little difficulty. It is also seen occasionally as a congenital condition associated with defective or irregular movements of the affected eyeball due to insertion of the ocular muscles farther back in the sclerotic than normally. There is an apparent enophthalmos in states of collapse and severe hemorrhages.

Traumatic Enophthalmos.—*Characteristics.*—A true sinking of the globe may follow a traumatism in the neighborhood of the orbit. The reaction may immediately follow the injury or be delayed for days or even months.

Chief Signs.—History of trauma.

Cervical Sympathetic Paralysis (*Horner's Syndrome*).—*Characteristics.*—The eyeball is retracted into its orbit, with diminution in the size of the palpebral fissure, constriction of the pupil, and absence of sweating and blushing on the paralyzed side. The pupil while contracting to light and in convergence, does not dilate in a dim light nor to cocain instillation.

Atrophy of the Eyeball.—*Characteristics.*—There is a diminution of the size of and alteration of the shape of the globe, caused by the contractions of inflammatory exudations. The eyeball appears to be sunken within its orbit.

Chief Signs.—History of previous inflammation.

THE PUPILS

SYMPTOMS	PAGE
Changes in the Size and Shape of the Pupils (Myosis; Mydriasis; Anisocoria; Irregularity)	98
Abnormalities of the Pupillary Reflexes (Sluggishness; Immobility; Argyll-Robertson Pupil; Hippus, etc.)	103

CHANGES IN THE SIZE AND SHAPE OF THE PUPILS

(*Myosis; Mydriasis; Anisocoria; Irregularity*)

The normal size of the pupils varies during life. In extreme infancy they are small; they become larger during young adult life and middle life, and ultimately become small in old age. Changes in size and shape are classified as follows: (1) Myosis, or contracted pupils; (2) Mydriasis, or dilated pupils; (3) Anisocoria, or unequal pupils; (4) Irregularity in shape.

Contracted pupils are normal in sleep, in bright light, and in accommodation. Pathological myosis is of two types: (1) spastic myosis, due to contraction of the sphincter iridis by stimulation, (2) paralytic myosis, due to paralysis of the dilator pupillæ. Certain drugs when applied locally, or taken internally, cause constriction of the pupils. Morphine, when taken internally or hypodermatically, causes myosis, but when applied locally, does not do so. Physostigmin causes constriction when employed either locally or internally. Pilocarpin acts likewise, as does also muscarin. Photophobia causes the pupils to be constricted (for causes of, see page 116). Contraction then, is due to paralysis of the sympathetic (innervating the dilator pupillæ), to stimulation of the oculomotor nerves (supplying the contracting fibers of the iris or sphincter pupillæ), or to direct stimulation of the sphincter pupillæ.

Dilatation of the pupils, mydriasis, occurs normally in dim light, reflexly by sudden sensory stimuli (as by scratching or tickling the skin, or from pain), and as a psychic reflex during some sudden emotion, such as fright and terror. In most comatose conditions (except when due to opium and morphin, or uremia) the pupils are dilated. This applies also to stupor and trance as a rule. Syncope,

dyspnea, and nausea are usually accompanied by mydriasis. Certain drugs act as mydriatics, especially atropin (locally or internally) and related drugs (homatropin, hyoscin, and eumydrin), adrenalin (intravenously or locally), and cocain (locally and in poisonous doses). In general, dilatation of the pupils is due to stimulation of the sympathetics, paralysis of the third nerve, paralysis of the myoneural junctions in the circular muscle of the iris. In run-down conditions mydriasis is usual. Dilated pupils are present in all states of anemia.

Inequality in the size of the pupils, anisocoria, is observed frequently, and may have no pathological significance; but profound difference in the size of the pupils is nearly always symptomatic of some organic lesion, either of the eyes or of the nervous system. One pupil may be contracted or dilated and the other normal, or one may be contracted and the other dilated. Of course, myotic drugs and mydriatics, when applied locally to one eye, will cause the pupil to be contracted or dilated.

Irregularities in the shape of the pupils, other than small and changing ones, are usually indicative of eye pathology or organic disease of the central nervous system.

Hyperopia (*Far-Sightedness*).—*Characteristics*.—The pupils are usually contracted, the ciliary muscle remaining in a greater or lesser state of spasm.

Chief Signs.—See page 88.

High Myopia (*Near-Sightedness*).—*Characteristics*.—The pupils are dilated and somewhat sluggish.

Chief Signs.—See page 88.

Iritis (*Iridocyclitis*).—*Characteristics*.—The pupil of the affected eye is contracted, grayish, sluggish in action, and irregular, the latter being due to adhesions.

Chief Signs.—See page 85.

Glaucoma.—*Characteristics*.—In acute and chronic inflammatory glaucoma, the pupil is dilated, oval, immobile, and often presents a greenish reflex. In simple glaucoma (chronic non-inflammatory glaucoma) the pupil is only slightly or moderately dilated and is sluggish.

Chief Signs.—See page 85.

Anisometropia (*Unequal Refraction in the Two Eyes*).—*Characteristics*.—Pupillary inequality may exist.

Chief Signs.—See page 88.

Cerebral Syphilis (*Basal Meningitis*).—*Characteristics*.—Characteristic pupillary changes occur, as irregularity of outline, inequality, and the Argyll-Robertson pupil. These may be early manifestations.

Chief Signs.—History of syphilis (two to five years before); mental symptoms (from fretfulness to dementia); insomnia; attacks of somnolence; vertigo; cranial nerve palsies (especially second, third, and sixth); may be epileptiform attacks, transient aphasia or paralyzes; positive Wassermann; spinal fluid (positive Wassermann; lymphocytosis, increased globulin, colloidal gold reaction, luetic curve).

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics*.—Pupillary changes occur early. Small pupils are often met with (cervical tabes). Large pupils are sometimes seen, and when seen are often associated with paralysis of the third nerve or with optic atrophy. Some inequality and irregularity of outline are usually present. Loss of the light reflex with preservation of contraction on

accommodation (Argyll-Robertson phenomenon) is found in about two-thirds of the cases.

Chief Signs.—See page 89.

General Paresis (*Paralytic Dementia; General Paralysis of the Insane*).—*Characteristics.*—Pupillary changes occur early and are constant and characteristic. The pupils are unequal in size and irregular in outline, findings which are just as significant as the Argyll-Robertson reaction which is present in many cases. Sometimes there is myosis, sometimes mydriasis, and in other cases the pupils may be oval in shape.

Chief Signs.—Age, twenty-five to forty-five years; history of syphilitic infection; insidious onset; early psychological alterations (inattention, forgetfulness, rapid mental fatigue, emotional changes, excesses and immorality); later delusions of grandeur and mental exaltation; progressive dementia and paralysis; pupillary changes; increased knee-jerks; tremulous tongue; slow, slurred speech; stolid facies; epileptiform or apoplectiform attacks; various transient paralyses; uncertain gait; positive Wassermann; spinal fluid examination (positive Wassermann, leukocytosis, increased globulin, colloidal gold paretic curve).

Tuberculous Meningitis (*Basilar Meningitis*).—*Characteristics.*—In the irritative stage the pupils, which may have been dilated, are usually contracted. In the second stage, as stupor sets in, the pupils are dilated or irregular, and in the final stage of paralysis, the pupils become dilated and inactive to light.

Chief Signs.—See page 89.

Cerebrospinal Meningitis (*Cerebrospinal Fever*).—*Characteristics.*—The pupils are usually dilated, but may be contracted in severe forms. Inequality and sluggish reaction are common.

Chief Signs.—See page 89.

Cerebral Tumor.—*Characteristics.*—Cerebral irritation in the early stages may cause myosis with preservation of the light reflex. Usually the pupils are unequal later, due to unequal optic neuritis in the two eyes, that on the side of the lesion being dilated. Sometimes in tumors of the pons the pupils may show ectopic or an eccentric relation to the iris.

Chief Signs.—Vomiting, often early and constant (especially in cerebellar and pontine growths), not related to food, unaccompanied by nausea, and may be projectile; optic neuritis (choked disk; papillitis) usually bilateral; vertigo; may be mental or emotional changes; may be convulsions; slow pulse; localizing symptoms; x-ray.

Cerebral Abscess.—*Characteristics.*—There may be myosis due to cerebral irritation. Rarely there is a dilated pupil on the side of the abscess.

Chief Signs.—See page 10.

Apoplexy (*Cerebral Hemorrhage*).—*Characteristics.*—During the stage of deep coma the pupils are dilated and inactive; they are often unequal, that on the hemiplegic side being dilated.

Chief Signs.—See page 91.

Pontine Hemorrhage.—*Characteristics.*—The pupils are contracted (pin-point pupils).

Chief Signs.—See page 92.

Ventricular Hemorrhage.—*Characteristics.*—The pupils, widely dilated at the outset, become contracted, and the light reflex is lost.

Chief Signs.—See page 816.

Cerebral Thrombosis (Softening).—*Characteristics.*—The pupils are usually dilated.

Chief Signs.—See page 315.

Acute Transverse Myelitis.—*Characteristics.*—Myosis occurs when the cervical region of the cord is affected (spinal myosis).

Chief Signs.—See page 624.

Concussion of the Brain.—*Characteristics.*—The pupils are usually dilated but are usually equal and react to light.

Chief Signs.—See page 10.

Fracture of the Skull.—*Characteristics.*—In simple fracture of the vault, the pupils are dilated as in concussion. In fracture of the base, one pupil may be contracted. If the fracture is depressed, cerebral compression symptoms may develop, with first, contracted pupils, and later dilated or unequal and immobile pupils. Should extradural or meningeal hemorrhage follow the fracture, the pupil of the affected side becomes dilated and immobile due to compression by the clot.

Chief Signs.—See page 105.

Cervical Sympathetic Paralysis (Horner's Syndrome).—*Characteristics.*—This is merely a symptom complex occurring in any condition which, by pressure or destruction, causes paralysis of the pupil dilating system. The pupil on the affected side is constricted, the globe retracted, and the palpebral fissure narrowed. The pupil does not dilate on stimulation of the skin of the neck or with cocaine, but reacts to light and accommodation. Some of the causative lesions are given in this book. Mere irritation of the cervical sympathetic is more common and causes dilatation of the pupil.

Syringomyelia (Spinal Gliosis).—*Characteristics.*—The pupils are often unequal, due to either irritation or paralysis of the cervical sympathetic of one side, usually the latter (Horner's syndrome, see above).

Chief Signs.—See page 94.

Encephalitis Lethargica (Epidemic Encephalitis).—*Characteristics.*—Fleeting irregularities of the pupils occur, but often there are no pupillary changes.

Chief Signs.—See page 90.

Complete Lesion of the Brachial Plexus.—*Characteristics.*—The pupil on the affected side is constricted and the palpebral fissure narrowed; the globe may be retracted (Horner's syndrome).

Chief Signs.—History of trauma to the neck or arm; complete motor and sensory paralysis of the arm (flaccid paralysis); serratus magnus, rhomboids, and levator anguli scapulæ not affected.

Clumpke's Paralysis (Lower Arm Type).—*Characteristics.*—The pupil is contracted, the palpebral fissure is narrowed, and there may be a slight enophthalmos on the side of the lesion (Horner's syndrome).

Chief Signs.—Presence of a condition causing compression, or a previous complete lesion; paralysis of the extrinsic muscles of the hand and possibly the flexors of the wrist and fingers (lower motor neuron type); numbness or anesthesia of the inner side of the forearm and hand; "claw hand."

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics*.—Pupillary inequality is not infrequent (24 per cent). The pupils may, however, be of medium size or large. In the late stages myosis may develop.

Chief Signs.—See page 94.

Epilepsy.—*Characteristics*.—During the tonic stage of the fit the pupils are dilated and inactive to light. On the return to consciousness they resume their normal size, although if the fit has affected one side more especially, the pupil on that side may remain more dilated than its fellow.

Chief Signs.—See page 46.

Sunstroke (*Insolation; Thermic Fever*).—*Characteristics*.—The pupils are at first dilated but are later markedly contracted to pin-point size.

Chief Signs.—See page 11.

Sympatheticotonia.—*Characteristics*.—This is not a disease but a syndrome, which may occur normally in women, and in many constitutional diseases. There is an exaggerated irritability of the entire sympathetic nervous system. The pupils are large and mobile.

Chief Signs.—Cardiovascular irritability (tachycardia, palpation, precordial pain, throbbing of the arteries, flushing, capillary pulsation); delayed peristalsis; deficient gastric secretion; heightened temperature, blood-pressure, and metabolism.

Neurosis (“*Neurasthenia*”).—*Characteristics*.—The pupils are dilated, sometimes unequal.

Chief Signs.—See page 40.

Alcoholic Coma.—*Characteristics*.—The pupils are dilated.

Chief Signs.—History of drunken debauch; coma rarely complete; respirations deep but not stertorous; subnormal temperature; alcoholic breath.

Morphinism (*Opium Poisoning; Morphia Habit*).—*Characteristics*.—In those addicted to the morphin habit, the pupils are dilated or unequal except when under the influence of a dose, when they are contracted. In acute poisoning with coma, the pupils are pin-point but may dilate in the final stage.

Chief Signs.—Morphia Habit: Appearance of premature age with sallowness, emaciation, and thin gray hair; unreliability and lying; “neurasthenia.”

Chief Signs.—Acute Poisoning: Profound coma; cyanosis; slow pulse and respiration; moist skin; normal temperature; flexor plantar reflex.

Uremia.—*Characteristics*.—During the coma, the pupils are contracted.

Chief Signs.—Gradual or sudden onset, often preceded by headache, drowsiness, or delirium, vomiting, twitching; dyspnea; may be Cheyne-Stokes respiration; convulsions common; urinous odor; high blood-pressure; hardened arteries; may be edema; urinalysis (albumin, casts); albuminuric retinitis (ophthalmoscopy).

Asphyxia.—*Characteristics*.—The pupils are dilated.

Chief Signs.—See page 677.

Arteriosclerosis.—*Characteristics*.—The pupils are often contracted. This may be the case in any condition of high blood-pressure.

Chief Signs.—See page 9.

Lobar Pneumonia.—*Characteristics*.—Very often the pupils are unequal, the dilated pupil being, as a rule, on the affected side.

Chief Signs.—See page 39.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics*.—In many

cases the pupils are unequal in size, the dilated pupil being on the affected side.

Chief Signs.—See page 31.

Aneurysm of the Arch of Aorta.—*Characteristics.*—Pupillary inequality may occur due to irritation (with dilatation) or destruction (with constriction) of the sympathetic from pressure, or to compression or obstruction of the carotid (dilatation). Pupillary changes may be due to syphilis, but the light reflex is lost.

Chief Signs.—See page 51.

Mediastinal Tumor.—*Characteristics.*—Inequality of the pupils may be present but is not common. It results from pressure on the sympathetic, irritation causing dilatation, and paralysis causing constriction.

Chief Signs.—See page 50.

Pleurisy with Effusion.—*Characteristics.*—Inequality of the pupils is not infrequent, the larger pupil being on the same side as the thoracic trouble.

Chief Signs.—See page 416.

Less Common Causes.—Spinal caries, Pott's disease (both pupils contracted or one dilated); fracture-dislocation of the cervical spine (both pupils contracted or one dilated or one contracted); basal meningeal hemorrhage (pin-point pupils); foreign body in the brain (first contracted, then dilated or unequal and immobile); spinal cord tumor, cervical region (one pupil contracted); innominate aneurysm (one pupil dilated from sympathetic irritation); trigeminal neuralgia (one pupil dilated); hydrocephalus (both pupils dilated); nitrous oxid and ether anesthesia (both pupils dilated); cervical rib (one pupil contracted due to sympathetic paralysis); "hysteria" (both pupils dilated); melancholia (both pupils dilated); tumor of the neck (one pupil contracted or dilated due to sympathetic affect); botulism (both pupils dilated); ptomainism (both pupils dilated); catalepsy (both pupils dilated); acute primary dementia (both pupils dilated); delirium tremens (both pupils contracted); mania (both pupils dilated); hematoma of the dura mater (both pupils contracted); migraine (one pupil contracted); mitral stenosis (one pupil dilated or both contracted); action of aconite, chloroform, chloral, conium, the cyanids, duboisin, viburnum, pituitrin, stramonium, tobacco (both pupils dilated); tumor at the apex of one lung (one pupil dilated or contracted); typhus fever (both pupils contracted); hematomyelia (Horner's syndrome); acute febrile polyneuritis (unequal pupils); goiter (Horner's syndrome); tumor or adenopathy of the neck (Horner's syndrome); psychoneurosis (unequal pupils); postdiphtheritic paralysis (both pupils dilated); aortic regurgitation (both pupils dilated); acute yellow atrophy (both pupils dilated); pleural adhesions at the apex (one pupil dilated); hydrothorax (one pupil dilated); cataract (may be dilated pupil); choroid disease (may be dilated pupil); scleritis (may be contracted pupil); retinitis (the pupils may be contracted); amaurosis (dilated pupils); dislocation of the lens (dilated pupil); coloboma; iridectomy.

ABNORMALITIES OF THE PUPILLARY REFLEXES

(*Sluggishness; Immobility; Argyll-Robertson Pupil; Hippus, etc.*)

The pupils normally contract upon exposure to light, with accommodation, and with convergence. The light contraction may be direct or consensual. The direct

light reflex is obtained by exposing one eye to increased illumination and observing the contraction of this pupil. The consensual or indirect light reflex is obtained by throwing the light into one eye and observing the contraction of the pupil of the other eye. The direct and consensual reactions are practically equal. The accommodation and convergence reflex is obtained by directing the patient to look at an object held several inches in front of the face in the middle line; the pupils will be seen to contract. These three actions are associated. The dilatation reflex is seen upon shading the eyes (both direct and consensual), and upon looking at a distant object. In addition there is a sensory reflex; when sensory nerves are stimulated, as by scratching or tickling the skin, both pupils dilate.

The main abnormalities of the pupillary reflexes are: (1) sluggish reaction to light, (2) immobility (fixed pupil), (3) the Argyll-Robertson pupil (loss of the light reflex with preservation of accommodation), (4) the reversed Argyll-Robertson reaction (loss of accommodation with retention of the light reflex), (5) loss of the sensory or psychic reflex, (6) hippus (alternate dilatation and contraction of the pupils). Other abnormalities are the paradoxical pupillary reflex (the pupils dilating under the stimulus of light), and the hemianopic pupillary reflex (the pupils react when the light falls on the blind half of the retina in lesions posterior to the corpora quadrigemina, but do not react in lesions anterior to these bodies). Other reactions are elicited at times, but need not be considered.

Blindness in one eye abolishes the direct reflex in this eye, but its consensual reflex is preserved. In certain pathological conditions there may be loss of the light reflex without interference with sight; this is seen, for example, in paralysis of the iris as the result of the use of a mydriatic (atropin, cocain), or in oculomotor paralysis. In all states of deep coma and syncope the light reflex is sluggish or absent. High grades of anxiety or fear are accompanied by rigid pupils. In conditions with optic neuritis or choked disk the reactions are normal unless there is complete blindness. In optic atrophy, when complete, the pupil is dilated and the iris motionless; but even when the pupil fails to contract under the influence of light thrown upon the retina, it may do so in the act of convergence. If the atrophy is confined to one eye no reaction will occur when the light falls upon the corresponding retina, but instant contraction takes place when it is directed upon the retina of the unaffected side. The Argyll-Robertson pupil may be present temporarily in the acute infectious diseases.

Cataract.—*Characteristics.*—Sometimes the effect of exclusion of light or of a mydriatic fails to induce a dilatation of the pupil.

Chief Signs.—See page 107.

Acute Glaucoma.—*Characteristics.*—During the glaucomatous attack the pupil is fixed and dilated.

Chief Signs.—See page 85.

Acute Iritis.—*Characteristics.*—The pupil is contracted, and the reaction to the influence of light and mydriatics is diminished or lost.

Chief Signs.—See page 85.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—In the early stages the reactions are often sluggish. The Argyll-Robertson pupil is present in many cases (at least 70 per cent). Loss of the pupillary light-reaction may be complete or incomplete, or it may be unilateral or bilateral, though it is usually complete

and bilateral. In some cases the contraction may be feeble and sluggish and followed by a rapid dilatation, or the pupil may oscillate (hippus). Although the direct pupillary light reaction may be lost in one eye, yet the consensual light-reaction when light is thrown upon the other eye, may be unimpaired. The reaction of the pupils to stimulation of the skin of the neck may be lost or impaired. The paradoxical pupillary reaction may be present in some cases, the pupil dilating instead of contracting on accommodation.

Chief Signs.—History of syphilis (six to fifteen years previous); lightning pains; absence of the knee-jerks; Romberg's sign; later ataxic gait; sensory changes; trophic lesions; hypotonia; visceral crises; difficulty in micturition; optic atrophy; ocular palsies; positive Wassermann; spinal fluid examination (positive Wassermann, increased globulin, lymphocytosis, colloidal gold reaction, tabetic curve).

General Paresis (*Paralytic Dementia; General Paralysis of the Insane*).—*Characteristics.*—Sluggish pupillary reactions are common. In many cases the complete Argyll-Robertson reaction is present, but not as frequently as in tabes. This sluggishness, combined with inequality and irregularity, is quite characteristic.

Chief Signs.—See page 100.

Cerebral Syphilis (*Basal Meningitis*).—*Characteristics.*—The pupillary reflexes are often perverted. Third nerve palsies are common and with them the light reflex is sluggish or absent, or the pupil immobile (ophthalmoplegia interna). The Argyll-Robertson pupil may be present. Other abnormalities sometimes occur.

Chief Signs.—See page 99.

Cerebral Tumor.—*Characteristics.*—The pupillary reactions are not usually altered until optic atrophy develops; if this is complete the pupil is dilated and the iris is motionless to light, though it may contract in the act of convergence. In tumors of the third ventricle there is early bilateral impairment of the light-reaction. The light reflex is also defective upon the side of the lesion in tumors of the midbrain and subthalamie region. In tumors of the corpora quadrigemina (and pineal body) the pupillary reflex may be sluggish or absent or there may be the reversed Argyll-Robertson pupil.

Chief Signs.—See page 100.

Fracture of the Skull.—*Characteristics.*—If generalized cerebral compression sets in following a depressed fracture, the pupils in the final stage do not react to light; they are dilated and unequal. In meningeal hemorrhage, the pupil of the opposite side becomes dilated and immobile owing to extension of the clot to the base of the brain.

Chief Signs.—History of injury to the skull or by *contrecoup*; depressed fracture with compression:—first, headache, vertigo, delirium, convulsions, vomiting, contracted pupils, choked disk, slow pulse, rapid respirations, elevated blood-pressure, and bloody spinal fluid of increased tension; second, unconsciousness, slow stertorous respiration; third, Cheyne-Stokes breathing, rapid pulse, drop in blood-pressure, hyperpyrexia, complete relaxation; meningeal hemorrhage:—first, temporary unconsciousness with feeble pulse; second, a lucid interval; third, secondary unconsciousness, paralysis, choked disk, rapid pulse, elevated temperature, clear or bloody spinal fluid.

Tuberculous Meningitis (*Basilar Meningitis*).—*Characteristics*.—In the later stages the pupils become inactive to light and unequal or dilated.

Chief Signs.—See page 89.

Cerebrospinal Meningitis (*Cerebrospinal Fever*).—*Characteristics*.—Sluggish reaction with inequality is common. Hippus is not infrequent.

Chief Signs.—See page 89.

Encephalitis Lethargica (*Epidemic Encephalitis*).—*Characteristics*.—Unilateral or bilateral paralysis of accommodation may occur, without involvement of the light reaction (reversed Argyll-Robertson pupil).

Chief Signs.—See page 90.

Apoplexy (*Cerebral Hemorrhage*).—*Characteristics*.—In deep coma the pupils do not react to light.

Chief Signs.—See page 91.

Primary Internal Hydrocephalus.—*Characteristics*.—The light reaction is early impaired or absent, though the accommodation reflex may be retained (Argyll-Robertson pupil). This may occur at a stage when optic neuritis is mild or acute and the vision unimpaired.

Chief Signs.—Headache; vomiting; optic neuritis; giddiness; varying focal or general convulsions; early impairment of the upward movement of the eyes; early failure of vision; progressive bilateral spasticity with increased reflexes.

Asphyxia (*Drowning, Strangulation, Suffocation, Carbon Monoxid*).—*Characteristics*.—The pupils are sluggish or fixed.

Chief Signs.—See page 677.

Cervical Sympathetic Paralysis (*Horner's Syndrome*).—*Characteristics*.—The affected pupil does not dilate when shaded, yet it contracts briskly to light and convergence. The ciliospinal or sensory reflex, which consists in a dilatation of the pupil when the skin of the neck on the same side is pinched, is abolished. This syndrome occurs in a variety of conditions.

Chief Signs.—See page 101.

Syringomyelia (*Spinal Gliosis*).—*Characteristics*.—When the cervical sympathetic is paralyzed as it often is by reason of the frequent involvement of the cervical region in this disease, the pupillary reactions are altered as described under cervical sympathetic paralysis above.

Chief Signs.—See page 94.

Postdiphtheritic Neuritis.—*Characteristics*.—The eye is most frequently affected next to the palate, though usually not before the fourth or fifth week. There is loss of the power of accommodation from paralysis of the ciliary muscles (cycloplegia), revealed by difficulty in reading; the pupils may react to light, but are often sluggish. The Argyll-Robertson pupil occurs very rarely.

Chief Signs.—See page 90.

Acute Febrile Polyneuritis.—*Characteristics*.—The Argyll-Robertson pupil may be present.

Chief Signs.—See page 327.

Migraine (*Sick Headache; Hemicrania*).—*Characteristics*.—In some cases there is spasmodic action of the pupil on the affected side, which dilates and contracts alternately (hippus).

Chief Signs.—See page 6.

Epilepsy.—*Characteristics.*—During the tonic stage of the major fit the pupils are inactive to light and dilated. The pupillary light reflex may return during the clonic stage, even when the pupils are still dilated. Hippus is noted in some epileptics.

Chief Signs.—See page 46.

Dementia Præcox.—*Characteristics.*—The pupils fail to dilate in response to psychical stimuli (Bumke's psychic pupil reflex); also, on trying to close the lids against the will of the patient, the pupils contract.

Chief Signs.—See page 41.

Less Common Causes.—Embolism or thrombosis of the central artery of the retina (large and irresponsive pupil); cervical cord tumor (unilateral absence of the ciliospinal and dilatation reflexes); ataxic paraplegia (Argyll-Robertson pupil sometimes); hereditary cerebellar ataxia (Argyll-Robertson pupil sometimes); nuclear ophthalmoplegia (Argyll-Robertson pupil); progressive muscular atrophy (Argyll-Robertson pupil sometimes); senile brain atrophy (Argyll-Robertson pupil sometimes); cervical myelitis (may be reversed Argyll-Robertson pupil); retinitis (may be sluggishness); scotoma (hippus); blow on the eyeball (may be paralysis of accommodation); choroiditis (may be Argyll-Robertson pupil); chorea (may be hippus); alcoholism (may be hippus); multiple sclerosis (may be hippus); "hysteria" (hippus); "neurasthenia" (may be hippus); spasmus nutans (may be hippus); acute rheumatic fever (may be hippus); high arterial tension (pupil first contracts then dilates under light); melancholia (may be paralysis of accommodation); lead poisoning (may be Argyll-Robertson pupil); exophthalmic goiter (may be hippus); diabetic sclerosis (may be paralysis of accommodation or Argyll-Robertson pupil); mania (may be hippus); anemia (may be hippus); spinal neuritic muscular atrophy, tabetic type (Argyll-Robertson pupil); alcoholic neuritis (may be Argyll-Robertson pupil); cerebral softening (may be Argyll-Robertson pupil); synechia (absence of the ciliospinal reflex).

THE LENS

CATARACT

The diagnosis of cataract is made with the ophthalmoscope, the pupil being dilated. During the incipient stage, examination by oblique illumination will show a grayish or whitish opacity on a black ground, and with the ophthalmoscope at a distance a black opacity upon a red field. Later the entire pupil will appear grayish and there will be an absence of fundus reflex.

Senile Cataract (*Simple Cataract; Gray Cataract*).—*Characteristics.*—The opacity may begin either in the cortex or in the nucleus, usually, however, beginning in the former, the nucleus remaining transparent throughout. Almost always both eyes are involved, though generally one before the other. The color is usually gray, and the nucleus yellowish or brownish and waxy looking. If the nucleus is small and the surrounding cortex uniformly white, the cataract is comparatively

soft; if large and distinctly gray, yellowish, or brownish, it is hard. If the sclerosis of the nucleus extends to the cortical substance, so that the whole lens is brownish and the pupil black, it is called black cataract. The time required for full development varies greatly, from a few months to years; it may remain stationary at any stage. There is a period of growth from incipency to maturity. The opacity most frequently begins as streaks which extend from the periphery of the cortex to the center of the lens, less frequently with dotlike or cloudlike opacities in any portion of the lens (incipient stage). As the lens swells (immature stage) it appears bluish-white, shining, and presents distinctly the marking of the stellate figure. In the mature stage the lens loses most of its fluid, shrinks somewhat, and becomes perfectly opaque and of a dull gray or amber color, the stellate markings being still recognizable. The cataract may continue to lose water, and thus a shrunken, dry, flattened mass results (shrunken cataract of the hypermature stage), or the cortex may become soft, liquid, and milky, and the nucleus sink to the bottom of this fluid.

Chief Signs.—Occurrence usually after fifty; diminished acuteness of vision (greatest when the cataract is central and diffuse, least when peripheral); may be complaint of seeing fixed spots (incipient stage); may be diplopia or polyopia; may be myopia in the early stages.

Juvenile Cataract (*Presenile Cataract*).—*Characteristics.*—The lens is uniformly white, bluish-white, or pearly, and always soft, sometimes fluid and milky. One or both eyes are affected.

Chief Signs.—Occurrence before forty; may be an hereditary factor.

Congenital Cataract.—*Characteristics.*—This may appear as a complete or partial opacity of the lens of one or both eyes. In the complete form the lens usually is white or bluish-white in color, densely opaque, and soft. There are several varieties of partial congenital cataract; (*a*) zonular, lamellar, or perinuclear cataract, in the form of an opaque layer surrounding the clear, but sometimes cloudy, center of the lens; (*b*) central cataract, consisting of a white opacity in the central part of the lens; (*c*) pyramidal cataract (anterior capsular or polar cataract), in which there is a small, well-defined, pyramidal-shaped or circular opacity; (*d*) punctate cataract, the opacities presenting themselves in the form of more or less fine points, occupying the center of the pupillary space; and (*e*) fusiform cataract, characterized by an opaque stripe passing from the anterior to the posterior pole of the lens, sometimes with offshoots, disposed like coral branches.

Chief Signs.—Occurrence from birth; may be history of convulsions.

Complicated or Secondary Cataract.—*Characteristics.*—The cataract frequently begins in the posterior part of the lens, often has distinctive features, and tends to degenerate. It may be complete or partial.

Chief Signs.—History and evidence of preceding ocular disease (iritocyclitis, choroiditis, myopia, corneal ulcers, glaucoma, retinitis pigmentosa, detachment of the retina).

Traumatic Cataract.—*Characteristics.*—Within a few hours after a perforating wound of the lens capsule (rarely after contusions of the eyeball), the injured portion of the lens becomes cloudy and swells until the entire lens becomes opaque. Then the lens substance either becomes absorbed, or part of the lens remains opaque in the capsule.

Chief Signs.—History and evidence of perforation.

After-Cataract (*Secondary Cataract*).—*Characteristics.*—An opacity of the lens capsule remains after cataract extraction.

Chief Signs.—History of cataract operation.

Diabetes Mellitus.—*Characteristics.*—A rapidly forming, often bilateral cataract of the soft type may occur in young or old diabetics.

Chief Signs.—See page 344.

Less Common Causes.—Albuminuria; gout; goiter; malaria; influenza; rickets; syphilis; arteriosclerosis (especially of the carotid); epilepsy; convulsions; meningitis; dermatoses; hookworm disease; seasickness; naphthalein cataract; ergotism; bottlemakers' or glassworkers' cataract; furnace workers' cataract; hypermetropia; astigmatism (the opacity in all of the preceding being due to cataract); arcus senilis lentis.

THE FUNDUS

(*Ophthalmoscopic Findings*)

SYMPTOMS	PAGE
Retinitis (Retinal Hemorrhages)	109
Optic Neuritis (Papillitis; Papilledema; Choked Disk)	111
Optic Atrophy	112
Black or White Spots or Patches on the Retina	114

RETINITIS

(*Retinal Hemorrhages*)

The ocular condition known as retinitis may be a diagnostic sign in various conditions. There are no external signs, the ophthalmoscope being necessary to determine its existence. There is diffuse clouding of the retinal details, especially in the region of the papilla; congestion of the disk with indistinctness of its edges; circumscribed exudations appearing as soft, white, or slightly yellow spots or patches, discrete or confluent, varying in size, and found principally along the retinal vessels and at the macula; tortuosity and distention of the vessels, seen principally in the veins, which are darker than normal; sometimes obscuring of the vessels in parts by swelling and exudation; hemorrhages of various sizes and shapes; and opacities of the vitreous. There is diminution in acuteness of vision of variable degree, but generally considerable; contraction of the field of vision, or scotomata; alterations in the shape of objects (micropsia, macropsia, metamor-

phopsia); diminution of the light sense; feeling of discomfort in the eyes; sometimes photophobia, but rarely pain. The condition is usually bilateral. Only the medical causes are considered below.

Chronic Interstitial Nephritis.—*Characteristics.*—Ocular symptoms are often of early occurrence. Retinitis is common (albuminuric retinitis). There are flame-shaped hemorrhages, stellate or fan-shaped white spots at the macula and about the disk, and small, rigid arteries with distinct white lines, which constrict the engorged veins where they cross them. There is often diminution of the acuteness of vision.

Chief Signs.—See page 754.

Toxemia of Pregnancy.—*Characteristics.*—Nephritis occurring in pregnancy is frequently accompanied by retinitis of the type described above. The condition tends to clear up after delivery. It occurs most frequently in primiparæ, usually in the final months of pregnancy.

Chief Signs.—See page 669.

Syphilis.—*Characteristics.*—In the acquired form, retinitis is found in the secondary stage, during the first or second year. In congenital syphilis the lesions are not infrequently seen after the subsidence of interstitial keratitis. The retinitis is generally associated with choroiditis, and often with iritis. In the acquired form there are scattered grayish spots fringed with pigment, and dustlike opacities of the posterior portion of the vitreous. In congenital syphilis there is a leaden discoloration of the fundus upon which are patches of pigment of various shapes and reddish-yellow spots or gray or white patches, all most marked in the periphery.

Chief Signs.—See page 34.

Diabetes Mellitus.—*Characteristics.*—Retinitis occurs as a late manifestation in elderly patients. There are numerous round, punctate hemorrhages with scattered small, bright, white spots in and around the macular region.

Chief Signs.—See page 344.

Arteriosclerosis.—*Characteristics.*—There is no true retinitis, but changes in the fundus are important and may be the first to reveal the existence of the disease. Any or all of the following changes may occur: Increased tortuosity and beaded appearance of the blood-vessels; greater opacity of the arteries and widening of the central light-streak; interruption of continuity in the veins where they are crossed by the arteries, and dilation just beyond these points; white lines along the blood-vessels, or scattered in spots; hemorrhages, scattered or along the blood-vessels.

Chief Signs.—See page 9.

Pernicious Anemia.—*Characteristics.*—Retinitis is very common. The disk and eyegrounds are very pale. There are numerous hemorrhages with white centers, extreme narrowing of the arteries, and distention of the veins. White spots are scanty, and there are no stellate figures. Blindness may result.

Chief Signs.—See page 35.

Chronic Myeloid Leukemia.—*Characteristics.*—“Leukemic retinitis” is common in this disease. Hemorrhages and white or yellow patches are numerous. The vessels are greatly dilated and tortuous. The eye-grounds may be pale. The sight may or may not be affected. In rare cases it is the earliest symptom.

Chief Signs.—See page 35.

Amaurotic Family Idiocy.—*Characteristics.*—The retinitis is characteristic.

There is a dark red spot at the macula, surrounded by a grayish-white zone. Optic atrophy follows.

Chief Signs.—Familial and congenital nature (especially among the Jews); psychic disturbances (idiocy); paresis; partial, followed by total blindness; marasmus and death (usually the second year of life).

Less Common Causes.—Acute nephritis; chronic parenchymatous nephritis; uremia; malaria; simple anemia; chronic lead poisoning; septicopyemia; purpura; hemophilia; scurvy; jaundice; menorrhagia; hematemesia; aneurysm of the aorta or carotid artery; scarlet fever; valvular heart disease; cardiac hypertrophy; phosphorus poisoning; local disease of the vessels of the retina and choroid; idiopathic retinitis; hemorrhages in the newborn; retinitis following iridectomy in glaucoma; embolism of the central artery; retinitis pigmentosa; thrombosis of the central vein; detachment of the retina; cavernous sinus thrombosis.

OPTIC NEURITIS

(*Papillitis; Papilledema; Choked Disk*)

Optic neuritis consists of a swelling of the optic disk, which is of a grayish or pink color, striated, with a blurred edge, and with the physiological cup filled in. The arteries are narrow, the veins swollen and tortuous, and the vessels hidden in places by exudation and appearing “kinked” at the edge of the disk. When the serous infiltration becomes more marked the condition is defined as choked disk. Sight may or may not be impaired; if severe, secondary optic atrophy may develop. The field of vision is usually contracted peripherally, especially for colors. There may be hemianopsia or scotomata. There is no pain, and there are no external signs, ophthalmoscopic examination being necessary to determine the condition. Usually the condition is bilateral, but it may be unilateral, or more marked on one side.

Cerebral Tumor.—*Characteristics.*—This is the most frequent cause of choked disk. It occurs in 9 per cent, and may be the first symptom of the intracranial growth. The occurrence or degree of papillitis depends only to a certain extent on the size or the situation of the tumor; the greater swelling is most often on the same side as the tumor. Tumors of the corpora quadrigemina give a high percentage of choked disk; also tumors of the parieto-occipital region and tumors of the basal ganglia. Choked disk is usually late in appearance in tumors of the frontal and parietal convolutions. The bulk of brain tumors without choked disk are those of pontine and subcortical origin, but if the subcortical growths spread to the base, the disk changes appear. It occurs in tumors of the medulla very rarely. The intensity of the process is greatest in morbid growths of the midbrain and thalamus, less pronounced in subcortical, parietal, and frontal lobe tumors. The acuteness of the onset usually varies with the acuteness of the tumor growth. Subsidence after decompression is often rapid.

Chief Signs.—See page 100.

Cerebellar Tumor.—*Characteristics.*—Choked disk is almost invariably present. It is an early sign, intense in character, and often quite out of proportion to the localizing symptoms. Its onset is acute, and vision is impaired early, either temporarily or permanently, from consecutive atrophic changes in the optic nerve.

Chief Signs.—See page 93.

Cerebral Syphilis.—*Characteristics.*—Syphilis is a frequent cause of optic neuritis; and it may lead to optic atrophy and blindness, especially in the basic meningitis of syphilis, in which it may occur early, at first unilateral, later bilateral. Choroiditis may also occur.

Chief Signs.—See page 99.

Tuberculous Meningitis (*Basilar Meningitis*).—*Characteristics.*—Optic neuritis occurs, but the duration of the disease is rarely long enough for it to become severe.

Chief Signs.—See page 89.

Cerebral Abscess.—*Characteristics.*—Optic neuritis is less frequent and less marked than in cerebral tumor; in fact, it is often absent, occurring usually only in prolonged cases.

Chief Signs.—See page 10.

Hydrocephalus (*Congenital or Acquired*).—*Characteristics.*—Optic neuritis is usually present and may be followed by optic atrophy and blindness.

Chief Signs.—See page 106.

Fracture of the Skull.—*Characteristics.*—When compression of the brain follows fracture, due to depressed bone, intracranial hemorrhage, or foreign bodies, choked disk comes on during the first stage, when the symptoms of cerebral irritation are prominent.

Chief Signs.—See page 105.

Less Common Causes.—Oxycephaly; scaphocephaly; cerebrospinal meningitis; encephalitis lethargica; chronic interstitial nephritis; diabetes mellitus; severe hemorrhage; heredity; idiopathic optic neuritis; pachymeningitis; anemia; leukemia; diseases of menstruation; pregnancy and lactation; lead poisoning; multiple neuritis; acute cervical myelitis; exhaustion; nasal sinus disease; orbital cellulitis; orbital tumor; retrobulbar neuritis; orbital hemorrhage; tumor of the optic nerve; dental disease; caisson disease; parenchymatous nephritis; influenza; measles; scarlet fever; diphtheria; typhoid fever; erysipelas; malaria; whooping-cough; rheumatic fever; arteriosclerosis; septicopyemia; cerebral sinus thrombosis; otitis media; pneumococcus meningitis; meningitis secondary to ear disease; acromegaly; infective endocarditis; cervical caries; tumor of the cervical spinal cord; pituitary tumor (without acromegaly); beriberi; gonorrhea; relapsing fever; sphenoidal sinusitis; malignant hypertension.

OPTIC ATROPHY

Optic atrophy may be primary or secondary. In primary optic atrophy the ophthalmoscope shows the edges of the disk to be sharply defined, the physiological cup deep and the lamina cribrosa visible, the color of the disk white or grayish, and the arteries small or normal. In secondary optic atrophy, which follows choked disk, the edges of the disk are blurred and irregular, the physiological cup filled in, the color of the disk a dead white, and the arteries small and often bordered by a white line. There is diminution of vision or loss of sight, alteration of the field of vision, and altered perception of color. The disk, it should be remembered, varies in color in health and may appear atrophied as the result of

congenital or senile peculiarities, although vision is normal and the field perfect.

Optic Neuritis.—*Characteristics.*—Choked disk unless relieved by cerebral decompression or removal of the cause leads to secondary optic atrophy. Blindness may result, but the prognosis is better in this form than in simple or primary optic atrophy, depending upon the extent to which the optic nerve has escaped from the destructive influences of the preceding processes.

For causes of Optic Neuritis, see page 111.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—Optic atrophy (primary) may be the earliest symptom (one-third of the cases). It usually progresses to total blindness in three to four years. The disk is gray but the margins remain distinct and sharp.

Chief Signs.—See page 104.

General Paresis (*General Paralysis of the Insane; Dementia Paralytica*).—*Characteristics.*—Primary optic atrophy, similar to that in tabes, may be seen.

Chief Signs.—See page 100.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—A transitory mild degree of papillitis occurs in some of the more acute cases, especially those with sudden onset of impairment of vision, and gives place to optic atrophy with temporary or permanent loss of central vision, although the blindness is rarely or never complete. The atrophy manifests itself mainly in pallor of the temporal half of the disks. It occurs in 50 per cent of the cases. The course may be irregular, with improvement of vision at times. The atrophied disk never shows the gray tint which is so characteristic of tabetic atrophy, and the blood-vessels of the fundus stand out clearly, and rarely present signs of inflammatory or vascular lesion.

Chief Signs.—See page 94.

Wood-Alcohol Poisoning.—*Characteristics.*—Optic neuritis followed by optic atrophy may follow one dose of methyl alcohol or repeated imbibition. Total permanent blindness results.

Chief Signs.—History of imbibition; headache; vertigo; gastro-enteritis; coma.

Acromegaly.—*Characteristics.*—There is bitemporal hemianopsia with pallor of the inner (nasal) half of the optic disks, without evidence of optic neuritis. The optic atrophy and blindness are progressive.

Chief Signs.—See page 123.

Hereditary Optic Atrophy (*Leber's Disease*).—*Characteristics.*—Optic atrophy may occur in young adult males without apparent cause, involving the papillomacular bundle and accompanied by central scotoma.

Chief Signs.—History of similar affection in male progenitors (transmitted by the female).

Retinitic and Choroiditic Atrophy.—*Characteristics.*—The disk has a grayish-red or yellow, waxy appearance, its outlines are somewhat indistinct, the vessels are exceedingly narrow, and the retina presents evidences of the antecedent choroiditis or retinitis.

Chief Signs.—History of progressive diminution in sight with night-blindness, central vision remaining until last, when complete blindness finally ensues.

Chronic Retrobulbar Neuritis (*Postpapillitic Atrophy*).—*Characteristics.*—At first there are no changes in the papilla; later there is very often a pallor of

the temporal side of the disks. The final result in some cases is optic atrophy, in which the disk is dense white or grayish in color, sometimes with a bluish tint, its margins irregular and somewhat hazy, its minute vessels lost, and its surface covered by connective tissue. The retinal arteries are narrow, the veins are normal in size and generally tortuous, and both sets are apt to be enclosed by white lines.

Chief Signs.—Often history of excessive use of tobacco, alcohol, or both; gradual diminution in acuteness of vision, the disturbance being most marked in bright light; central color scotoma for red and green; slow progress.

Glaucoma.—*Characteristics.*—After the disease has lasted a certain length of time, the increased tension causes excavation of the optic disk, a deep depression with very steep or overhanging edges (glaucomatous cup), over which the blood-vessels bend sharply and appear interrupted at the margin but are again seen at the bottom of the depression. The optic nerve becomes atrophied, the disk appearing pale, or in late stages greenish or bluish, and surrounded often by a whitish ring of choroidal atrophy.

Chief Signs.—See page 130.

Amaurotic Family Idiocy.—*Characteristics.*—Optic atrophy occurs in most cases with impairment of vision progressing to total blindness. There is a characteristic retinitis.

Chief Signs.—See page 110.

Less Common Causes.—Malaria; myxedema; arteriosclerosis; severe hemorrhage; lead poisoning; Friedreich's disease; hereditary cerebellar ataxia; meningitis; otitis media; fracture of the orbital canal; orbital cellulitis; embolism of the central artery; thrombosis of the central vein; fracture of the orbit; orbital periostitis; acute retrobulbar neuritis; tumor of the optic nerve; diabetes mellitus; influenza; aneurysm pressing on the chiasm; trauma to the temples; atoxyl poisoning; amyotrophic lateral sclerosis; paralysis agitans; chronic myelitis; bulbar paralysis; spastic spinal paralysis; oxycephaly; scaphocephaly; sexual excesses.

BLACK OR WHITE SPOTS OR PATCHES ON THE RETINA

In children of dark complexion the fundus not infrequently presents a bright luster, which changes its position with movements of the mirror, most marked along the blood-vessels, and resembling the shimmer of watered silk. Another peculiar but physiological appearance is sometimes due to opaque nerve fibers, which present whitish areas extending for a variable distance from the disk and terminate in brushlike extremities. The normal fundus also presents many minor variations.

Exudative Choroiditis.—*Characteristics.*—There are patches of exudation on the fundus varying in size, shape, and position. At first these areas are yellowish in color, with ill-defined edges; the retinal blood-vessels are seen to be lifted and to pass over them. Later, after several weeks or months, the exudation becomes absorbed, leaving patches of choroidal atrophy; these are whitish areas often presenting distinctly visible choroidal vessels, and marked with more or less pigment, especially at the margins. Different varieties of choroiditis give different pictures according to the character and situation of the patches (diffuse, central, disseminated, circumscribed, anterior, central, etc.).

Chief Signs.—See page 125.

Retinitis.—*Characteristics.*—The ophthalmoscope reveals circumscribed exudations appearing as soft, white, slightly yellow spots or patches, discrete or confluent, varying in size, and found principally along the retinal vessels and at the macula. There are also: diffuse clouding of the retinal details, congestion of the disk, obscuration of the vessels in parts, hemorrhages of various sizes and shapes, and opacities of the vitreous. In albuminuric retinitis the white spots are found chiefly at the macula and surrounding the disk; at the macula, there may be at first merely a few dots, but later more pronounced spots arranged in radiating lines which form a star-shaped figure with the fovea for a center; near the disk, and often more or less surrounding it, are larger spots, which may coalesce and form a ring around the disk. In diabetic retinitis there are small, bright spots in and around the macular region, grouped irregularly.

For causes of Retinitis, see page 109.

Syphilitic Choroidoretinitis.—*Characteristics.*—In the acquired form there are scattered grayish or white spots often fringed with pigment, especially in the macular region and in the periphery, and circumscribed white exudations along the large blood-vessels, forming white lines. The changes may be more circumscribed and be represented principally by a large, white exudate, macular or peripheral, changing later to an atrophic area with more or less pigmentation. In the hereditary form there is a leaden discoloration of the fundus upon which are patches of pigment of various shapes and reddish-yellow spots or gray or white patches, all most marked at the periphery.

Chief Signs.—See page 134.

Retinitis Pigmentosa.—*Characteristics.*—Black spots are present in the periphery of the fundus, which have the shape of branching cells, found especially along the blood-vessels. They commence at the equator, and in the course of years new spots form, the pigment circle gradually approaching the disk. The disk and retina are atrophied, the disk having a yellowish, waxy appearance. The retinal vessels are very small.

Chief Signs.—Onset early in life; hereditary history; night-blindness; concentric contraction of the field of vision; progressive diminution in sight, terminating after years in blindness; may be deafness and defective intelligence.

Detachment of the Retina.—*Characteristics.*—The detachment is usually found near the periphery. It presents a collection of grayish, bluish-gray, or greenish folds with white tops presenting a bright sheen, projecting a variable distance into the vitreous and shaking with movements of the eye. The blood-vessels pass over these folds and are therefore very tortuous and hidden in places.

Chief Signs.—See page 125.

Coloboma of the Choroid.—*Characteristics.*—This presents a large white patch, usually situated below the disk. The retinal vessels are seen passing across this patch.

Chief Signs.—Occurrence from birth; scotoma corresponding to the defect of the choroid and retina; may be also coloboma of the iris and other congenital defects of the eye.

Rupture of the Choroid.—*Characteristics.*—After the original extravasation of blood into the vitreous is absorbed, a long, yellowish-white streak with pig-

mented edges, curved with the concavity toward the disk, is seen, usually in the neighborhood of the disk and to its outer side.

Chief Signs.—History of contusion of the eyeball.

Tubercle of the Choroid.—*Characteristics.*—The tubercles appear as small, yellowish-white spots with soft, fading edges, varying in number, 1 to 2 mm. in diameter, located near the disk, in the macular region, or scattered over the fundus.

Chief Signs.—Occurrence in acute miliary tuberculosis and tuberculous meningitis.

VISION

SYMPTOMS	PAGE
Photophobia (Intolerance of Light)	116
Diplopia (Double Vision)	118
Double Vision in One Eye (Monocular Diplopia)	121
Hemianopsia	122
Contraction of the Field of Vision (Concentric or Irregular)	124
Dimness of Vision (Amblyopia)	126
Blindness, Transient or Permanent (Amaurosis)	129
Color-Blindness (Achromatopsia)	132
Blind-Spots (Scotomata, Muscæ Volitantes, etc.)	133
Colored Vision (Chromatopsia)	135
Change in the Shape and Size of Objects (Metamorphopsia, Micropsia, Macropsia)	135
Flashes of Light, Sparks, Bright Circles (Photopsia)	136

PHOTOPHOBIA

(Intolerance of Light)

Eye-Strain.—*Characteristics.*—Photophobia may be a marked symptom, many patients being benefited by wearing tinted glasses. It is especially notable in those suffering from uncorrected errors of refraction, particularly hypermetropia and astigmatism, who do close work.

Chief Signs.—See page 72.

Conjunctivitis.—*Characteristics.*—Photophobia is one of the symptoms common to all types of conjunctival inflammation. It is not constantly present in all varieties, but is commonly seen at some time during the course of the disease.

For the various forms of Conjunctivitis, see page 74.

Interstitial Keratitis.—*Characteristics.*—Photophobia is usually a troublesome symptom, and is more pronounced in strumous children who are at the same time syphilitic.

Chief Signs.—See page 80.

Phlyctenular Keratitis.—*Characteristics.*—Photophobia is often severe. The child may bury its head deeply in the bedclothes to avoid light, and the lids are spasmodically closed.

Chief Signs.—See page 80.

Ulcer of the Cornea.—*Characteristics.*—Photophobia is a variable symptom, being present in some cases but not in others.

Chief Signs.—See page 80.

Iritis.—*Characteristics.*—Photophobia varies considerably in degree, being almost or quite absent in some varieties, and severe in those of acute and violent onset.

Chief Signs.—See page 75.

Retinitis.—*Characteristics.*—Photophobia may or may not be present. It is never a marked sign, although comfort ensues from the use of tinted glasses.

For causes of Retinitis, see page 109.

Measles (Morbilli).—*Characteristics.*—Photophobia is one of the catarrhal symptoms of invasion, associated with other symptoms of conjunctivitis and coryza.

Chief Signs.—See page 194.

Coryza (Acute Rhinitis; Common "Cold").—*Characteristics.*—Photophobia is one of the catarrhal symptoms.

Chief Signs.—See page 155.

Influenza (La Grippe).—*Characteristics.*—Photophobia is often present.

Chief Signs.—See page 86.

Migraine (Sick-Headache).—*Characteristics.*—Photophobia may be present, being overshadowed by the pain.

Chief Signs.—See page 6.

Hay-Fever.—*Characteristics.*—Photophobia is often present with a neuralgic type of headache.

Chief Signs.—See page 76.

Tuberculous Meningitis (Basilar Meningitis).—*Characteristics.*—Intolerance to light may be noted in the first stage of the disease.

Chief Signs.—See page 89.

Cerebrospinal Meningitis.—*Characteristics.*—Photophobia is always present and severe. It is associated with great sensitiveness to noises.

Chief Signs.—See page 89.

Neurosis ("Hysteria"; "Neurasthenia").—*Characteristics.*—Photophobia is a not uncommon symptom met with, especially in old-fashioned "hysteria." It may be so extreme that the patient takes to wearing deep-tinted glasses, or covers her head with a black robe, or even requires to be led about like a blind person.

Chief Signs.—See page 40.

Encephalitis Lethargica (Epidemic Encephalitis).—*Characteristics.*—At

times, instead of ptosis, the eyes are kept partially closed on account of photophobia.

Chief Signs.—See page 90.

Quinin Poisoning.—*Characteristics.*—Photophobia is a common complaint.

Chief Signs.—See page 131.

Trigeminal Neuralgia (*Tic Douloureux*).—*Characteristics.*—The paroxysms of pain are often accompanied by photophobia.

Chief Signs.—See page 31.

Less Common Causes.—Iodism; bromism; chronic arsenic poisoning; suppurative meningitis; ophthalmia; glaucoma; snow-blindness; retrobulbar neuritis; choroiditis; cyclitis; aortic regurgitation; trichiniasis; typhus fever; whooping-cough; chickenpox; smallpox; occupation photophobia (furnace stokers, electric steel welders, workers in strong sunlight, x-ray workers); acute encephalitis; syphilitic pachymeningitis; cerebral tumor; herpes zoster ophthalmicus; anemia; dyspepsia; constipation; malingering; scleritis; sympathetic ophthalmitis; night-blindness.

DIPLOPIA

(*Double Vision*)

(See also "Double Vision in One Eye," page 121.)

Binocular diplopia occurs when the visual lines of the two eyes are not directed toward the same object, *i.e.*, when one eye deviates so that corresponding points on the two retinas are not stimulated simultaneously by the same image; the degree of diplopia is, therefore, proportional to the amount of deviation. The true and more distinct image corresponds to the normal eye, the false and less distinct to the deviated eye; in ocular paralysis the diplopia is increased when the eyes are carried in the direction of the usual action of the paralyzed muscles. The diplopia is termed homonymous when the false image is on the side of the deviating eye, crossed when on the opposite side, horizontal when the two images are level, and vertical when they are displaced vertically. Crossed diplopia is associated with divergent squint, homonymous with convergent squint. If the paralyzed muscle is also an elevator of the eyeball the false image is higher than the true; if a depressor, it is on a lower plane. To test for diplopia a red glass is placed before one eye to distinguish its image. A lighted candle is held about ten feet in front of the patient and moved into different positions, and the nature of the diplopia noted on a diagram having nine spaces. Paralysis of the ocular muscles produces diplopia, but ordinary concomitant strabismus or "cross-eyes" does not, for the image from the deviated eye is disregarded by the brain. The ocular muscular paralyses are described first; they are not disease entities but are secondary to the conditions following them. These are the same diseases as are given under "squint."

Oculomotor Paralysis (*Third-Nerve Paralysis*).—*Characteristics.*—Diplopia occurs when looking at an object situated within the sphere of action of the paralyzed muscle, and increases when the eyes are moved toward this side. With complete paralysis of this nerve there is crossed diplopia, the false image is higher, and its upper end inclined toward the paralyzed side. The paralysis, however, is

often incomplete, two or three muscles being affected, perhaps associated with paralysis of other nerves. If the internal rectus is paralyzed diplopia appears on looking toward the sound side; the two objects are level, the false inside the true. In paralysis of the superior rectus there is diplopia on looking up and the false image is above the true. Paralysis of the inferior rectus causes diplopia on looking down and the false image is below the true. When the inferior oblique is paralyzed there is diplopia on looking up, with the false image above and to the outer side of the true. Oculomotor paralysis is central or peripheral, according to the site of the lesion. It is symptomatic of many of the conditions given below.

Chief Signs.—Vertigo, nausea, uncertain gait; secondary deviation; erroneous projection; oblique position of the head (toward the side of the paralyzed muscle). If complete: dilated, immobile pupil; paralysis of accommodation; almost complete immobility of the eyeball, which deviates outward and downward; slight exophthalmos. If internal rectus paralysis: limitation of movement inward; divergent squint; face turned toward the sound side. If superior rectus paralysis: limitation of movement upward and toward the sound side; deviation of the eye downward and a little outward; face directed upward and toward the sound side, and the head inclined toward the shoulder of the sound side. If inferior rectus paralysis: limitation of movement downward and toward the sound side; deviation of the eye upward and slightly outward; face directed downward and toward the sound side, and inclined toward the shoulder of the paralyzed side. If inferior oblique paralysis: limitation of movement upward and toward the paralyzed side; eye deviated downward and slightly inward; face directed upward and toward the paralyzed side, and the head inclined toward the affected side.

Fourth-Nerve Paralysis (*Paralysis of the Superior Oblique Muscle*).—*Characteristics.*—There is double vision when the patient looks down (homonymous and vertical), the false image being below and to the outer side of the true.

Chief Signs.—Defective downward and inward movement (often too slight to be noticed); face directed downward and toward the sound side, and the head inclined over the shoulder of the sound side; difficulty in moving about (especially in descending stairs).

Sixth-Nerve Paralysis (*Paralysis of the External Rectus Muscle*).—*Characteristics.*—Diplopia occurs on looking toward the paralyzed side, the false image being outside the true one.

Chief Signs.—Limitation of movement outward; convergent squint; face turned toward the paralyzed side; conjugate deviation away from the side of the lesion (crossed control of the internal and external recti).

Acute Alcoholism.—*Characteristics.*—Diplopia is present after a certain degree of intoxication is reached, but passes off with the return of sobriety.

Chief Signs.—See page 37.

Asthenopia (*Muscle Imbalance*).—*Characteristics.*—In the more pronounced forms of heterophoria there is diplopia and indistinctness of print after fatigue of the eyes from use. The muscle balance can be maintained by effort for a certain length of time, but when the strain is too prolonged control fails. In exophoria, diplopia is complained of most after use of the eyes for near work, in esophoria with distant vision. Sometimes the patient complains of one eye turning in or out.

Chief Signs.—See page 88.

Cerebral Syphilis.—*Characteristics.*—Irregular diplopias are common from paralysis of the third, fourth, and sixth nerves. The third nerve is most frequently affected, usually partially, often accompanied by ptosis and pupillary changes. The sixth nerve is also commonly affected, usually unilaterally. The fourth nerve is less frequently involved.

Chief Signs.—See page 84.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—A history of temporary diplopia is often obtained. Permanent diplopia, due to permanent paralysis, or paresis, of one sixth nerve or of one third nerve is frequently observed.

Chief Signs.—See page 89.

General Paresis (*Dementia Paralytica*).—*Characteristics.*—Irregular diplopias may occur as a result of oculomotor palsies, but the latter are probably due to co-existent intracranial syphilitic lesions.

Chief Signs.—See page 100.

Tuberculous Meningitis (*Basilar Meningitis*).—*Characteristics.*—Paralysis of one or other ocular muscles may result in squint and diplopia.

Chief Signs.—See page 89.

Cerebrospinal Meningitis (*Cerebrospinal Fever*).—*Characteristics.*—The most common cranial nerve involvement is paralysis of the oculomotor nerves with diplopia.

Chief Signs.—See page 89.

Encephalitis Lethargica (*Epidemic Encephalitis*).—*Characteristics.*—Transient diplopia may be the earliest symptom.

Chief Signs.—See page 90.

Cerebellar Tumor.—*Characteristics.*—Symptoms referred to the cranial nerves are chiefly ocular in character, and consist of slight paresis of the external rectus muscle on the side of the lesion. This may occasionally give rise to diplopia, which is, as a rule, transitory, and unaccompanied by obvious strabismus.

Chief Signs.—See page 90.

Cerebral Tumor.—*Characteristics.*—Cranial nerve symptoms are not common; diplopia, therefore, is not of common occurrence.

Chief Signs.—See page 89.

Ophthalmoplegic Migraine.—*Characteristics.*—The characteristic features of this form of migraine are double vision and ptosis due to third-nerve paralysis, accompanying the attacks of headache. The ocular features may persist for some days.

Chief Signs.—See page 90.

Postdiphtheritic Paralysis.—*Characteristics.*—The external rectus is perhaps the most frequently affected external ocular muscle (sixth nerve). Diplopia accompanies the strabismus when it occurs.

Chief Signs.—See page 90.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—Diplopia, most commonly resulting from paralysis of the sixth nerve, is sometimes seen, and is often an early and transient symptom. Inquiry should always be directed as to antecedent diplopia. Occasionally the third and fourth nerves may be affected.

Chief Signs.—See page 94.

Orbital Cellulitis.—*Characteristics.*—Diplopia results from displacement of the eyeball, though eventually vision is reduced or abolished in the affected eye owing to the occurrence of optic neuritis followed by atrophy.

Chief Signs.—See page 96.

Orbital Tumor.—*Characteristics.*—The eyeball is usually displaced (exophthalmos) by the tumor, and diplopia results.

Chief Signs.—See page 96.

Myasthenia Gravis.—*Characteristics.*—Diplopia from weakness of the external rectus is not uncommon.

Chief Signs.—See page 63.

Symblepharon.—*Characteristics.*—Movements of the eyeball are often interfered with mechanically, and this may cause diplopia.

Chief Signs.—See page 72.

Less Common Causes.—All other causes of strabismus (see page 87).

DOUBLE VISION IN ONE EYE

(Monocular Diplopia)

The object appears double even when one eye is shut.

Partial Dislocation of the Lens.—*Characteristics.*—Some rays pass outside the lens direct to the macula, others pass through the edge of the lens and are deflected to a different part of the retina, two images thus being formed on the retina.

Chief Signs.—May or may not be history of injury; disturbance of vision; interference with accommodation; change of refraction; tremulous iris during movements of the eyes; increased or irregular depth of the anterior chamber; presence of the free convex edge of the lens in the pupil (bilateral and symmetrical if congenital).

Cataract.—*Characteristics.*—During the incipient stage an irregular astigmatism occurs due to the breaking up of the lens by cortical cracks and opacities into sectors of varying refractive power. Monocular diplopia, or more commonly polyopia, may result, one candle being seen as five or six.

For forms of Cataract, see page 107.

“Hysterical” Amblyopia.—*Characteristics.*—Monocular diplopia may be one of a number of ocular symptoms.

Chief Signs.—See page 128.

Double Pupil.—*Characteristics.*—Monocular diplopia is most evident when the object looked at is not in accurate focus.

Chief Signs.—Presence of two pupillary apertures, congenital or traumatic.

Astigmatism.—*Characteristics.*—A low error of refraction may cause monocular diplopia, letters or test types being accompanied by faint “ghosts” either above or to the side of the real letters, and in some cases overlapping them.

Chief Signs.—See page 85.

Less Common Causes.—Cerebral tumor.

HEMIANOPSIA

Hemianopsia is absence of half the field of vision of one or both eyes, and is usually restricted to lesions other than those of the retina or disk. It may be horizontal or vertical, the former being the more common. The horizontal forms are: (a) homonymous hemianopsia, or blindness of the corresponding lateral halves of the visual fields; (b) heteronymous hemianopsia, or blindness of the opposite lateral fields (binasal or bitemporal). Hemianopsia is due to a lesion of the visual fibers at or behind the optic chiasma. It is usually organic and bilateral, sometimes functional and bilateral or unilateral. The lesion may occur at one of three main sites: (a) one optic tract; (b) the posterior limb of one internal capsule; or (c) the optic radiations or one occipital region at or near the cuneus.

Hemianopsia is often discovered during a neurological examination, the patient having been unconscious of his visual defect; or the patient may have noticed that he was running into objects in broad daylight. To map out the blind area with accuracy a perimeter is required, but for ordinary purposes this may be dispensed with and a simpler method used. The patient is instructed to look straight at the examiner, while he brings a small object with his hand from the extreme right and left into the field of vision, each eye being covered while the other is tested. In the presence of hemianopsia the patient will not be aware of the object until it has passed one-half of the field (nasal or temporal side).

Several rules to remember in regard to hemianopsia are:

1. If the blindness is restricted to one eye or affects both eyes, but is not symmetric, then the lesion is in the optic nerve itself.
2. If there is homonymous hemianopsia the lesion is above the optic chiasma.
3. If there is bitemporal hemianopsia the lesion is at the central part of the optic chiasma, located anteroposteriorly.
4. Binasal hemianopsia is rare.
5. The lesion in homonymous hemianopsia is on the opposite side of the dark fields.

The reaction of the pupil in hemianopsia helps to localize the lesion. The test (Wernicke's) requires the directing of a small pencil of light in a dark room upon different portions of the retina. If, in hemianopsia, the light thrown upon either the blind or the seeing side of the retina cause contraction of the pupil, the lesion is back of the primary optic centers. If there is no contraction of the pupil when the ray of light falls upon the blind side of the retina, but there is contraction when it falls upon the seeing side, the lesion is in front of the primary optic centers.

Tumor of the Pituitary Body.—*Characteristics.*—Bitemporal hemianopsia occurs early. In one type of cases there is bitemporal hemianopsia with pallor of the nasal half of the optic disks, without evidence of optic neuritis; in a second type the early bitemporal hemianopsia occurs with optic neuritis which quickly gives place to blindness, affecting one side in advance of the other, so that temporal hemianopsia is found on one side and loss of vision on the other at one stage; and after complete blindness little or no optic atrophy is detected.

Chief Signs.—Mental changes; frontal headache; interference with the functions of the third and sixth nerves on one or both sides; may be anosmia; epileptic

fits, muscular hypertonicity, slight spasticity of the limbs; symptoms of hyperpituitarism (glycosuria, hyperglycemia, and sometimes acromegaly) or hypopituitarism (hypoglycemia, increased carbohydrate tolerance, drowsiness, perhaps obesity and sexual infantilism); x-ray of the sella turcica.

Acromegaly.—*Characteristics.*—Ocular features occur in a large proportion of the cases, bitemporal hemianopsia, optic atrophy, and in the late stages, pressure on the third and sixth nerves. One eye only may be affected. Tumor of the pituitary gland is often present.

Chief Signs.—Skeletal changes and increase in size (facial prominences enlarged, hands and feet enlarged, soft tissues increased); headache; may be irritability, deafness, somnolence; increasing blindness; polyuria, glycosuria and hyperglycemia early; hypoglycemia and increased carbohydrate tolerance later; x-ray of the sella turcica.

Cerebral Tumor.—*Characteristics.*—Hemianopsia occurs, dependent upon the situation of the tumor. It is homonymous except in tumor of the third ventricle, when there may be bitemporal hemianopsia. Hemianopsia is the usual thing in tumors of the occipital lobe, preceded perhaps by hemiachromatopsia, and accompanied by visual hallucinations and word-blindness or mind-blindness. A tumor of the parietal lobe, by extension into or pressure upon the occipital lobe may produce it; one in the temporal lobe, from extension backward and upward; one involving the crus, by pressure exerted upon the optic tract; one growing in the neighborhood of the basal ganglia, when it involves the posterior portion of the internal capsule; a growth in the corpora quadrigemina, probably from involvement of the external geniculate body. A tumor pressing upon the optic chiasma may produce hemianopsia; according to its location and extent there may be bitemporal hemianopsia, complete blindness in one eye with temporal hemianopsia in the other, complete blindness, or nasal hemianopsia. A tumor located in the posterior part of the corpus callosum may produce homonymous hemianopsia, probably from involvement of the occipital lobe.

Chief Signs.—See page 89.

Cerebral Abscess.—*Characteristics.*—If located in the parieto-occipital region homonymous hemianopsia is apt to occur.

Chief Signs.—See page 84.

Cerebral Syphilis.—*Characteristics.*—Owing to the frequent localization of the meningitic processes at the interpeduncular space (syphilitic basilar meningitis), the optic chiasm and ocular nerves are often affected. The syndrome of hypophysis tumor (pituitary gland) may be reproduced, with bitemporal hemianopsia due to involvement of the optic chiasma in its anterior portion by the exudate.

Chief Signs.—See page 99.

Cerebral Thrombosis (Softening).—*Characteristics.*—Blocking of the main occipital branch of the posterior occipital artery, or of the arteria calcarina passing to the cuneus, may be followed by homonymous hemianopsia.

Chief Signs.—See page 315.

Cerebral Embolism.—*Characteristics.*—As in thrombosis (see above).

Chief Signs.—See page 315.

Cerebral Hemorrhage (Apoplexy).—*Characteristics.*—Hemianopsia may exist on the same side as the paralysis, and there may be diminution in the acuteness of

the senses of hearing, taste, and smell. Homonymous hemianopsia of the halves of the visual fields opposite to the lesion is very frequent shortly after the onset, though often overlooked. If the hemorrhage is in the crus, the optic tract or the lateral geniculate body lying on the lateral side of the crus may be compressed, in which event there will be hemianopsia, associated with crossed hemiplegia—paralysis of the opposite extremities and oculomotor paralysis on the side of the lesion.

Chief Signs.—See page 91.

Migraine (*Sick-Headache; Hemicrania*).—*Characteristics.*—Transient hemianopsia may occur during the attack, confined to one eye, or homonymous.

Chief Signs.—See page 6.

Neurosis (*"Hysteria"*).—*Characteristics.*—Hemianopsia may occur. It may come on slowly or follow a convulsive attack.

Chief Signs.—See page 40.

Aneurysm of the Internal Carotid Artery (*Cerebral Portion*).—*Characteristics.*—Hemianopsia may occur from pressure on the optic nerve or the commissure.

Chief Signs.—May be infective endocarditis, or syphilis; headache; optic neuritis or ophthalmoplegia; may be a murmur audible on auscultation of the skull; may be rupture and fatal apoplexy.

Less Common Causes.—Dystrophia adiposogenitalis; aura epileptica; fracture of the base with callus formation; polycythemia; gout; tuberculous nodule; wounds of the brain.

CONTRACTION OF THE FIELD OF VISION

(*Concentric or Irregular*)

(See also "Hemianopsia," page 122.)

The field of vision can be outlined roughly by the hand. The patient is turned with his back to the light, two feet in front of the examiner. With one eye covered at a time the patient is directed to fix his uncovered eye on the examiner, who closes his other eye. The examiner then moves his hand with extended fingers from various parts of the periphery inward, midway between them, and the patient indicates when he sees the fingers. In this way the examiner can compare the patient's field with his own. The perimeter furnishes the most exact method. When the field is contracted concentrically the patient sees as though he were looking through a tube.

Optic Neuritis (*Papillitis; Choked Disk*).—*Characteristics.*—The field of vision is usually contracted peripherally, especially for colors. This contraction may be concentric or irregular, and is associated with an increase in size of the normal blind-spot, and there may be hemianopsia or scotomata.

For causes of Optic Neuritis, see page 111.

Optic Atrophy.—*Characteristics.*—The visual field is concentrically contracted or there are irregular or sector-shaped defects of the field, first for colors and then for form. There is, in addition, reduction in the acuteness of vision, diminution in the light sense, sometimes scotomata, and color-blindness. These symptoms tend to progress and end in complete blindness.

For causes of Optic Atrophy see page 112.

Neurosis (*"Hysteria"*).—*Characteristics.*—Concentric contraction of the field

may be noticed after a convulsive seizure, associated often with hemianesthesia, and more marked on the anesthetic side (usually the left). It is associated with contraction of the color fields, the blue diminishing first and the red last.

Chief Signs.—See page 40.

Retinitis.—*Characteristics.*—There are changes in the field of vision; these may be concentric contraction of the field (especially in retinitis pigmentosa), or scotomata (blind-spots). Other disturbances of vision are associated and even more prominent.

For causes of Retinitis, see page 109.

Exudative Choroiditis.—*Characteristics.*—Peripheral contraction and scotomata occur in the later stages.

Chief Signs.—Diminution of vision; distortion of objects; flashes of light; ophthalmoscopic examination (yellowish patches in the choroid, opacities of the vitreous); may be retinal changes (choroidoretinitis).

Detachment of the Retina.—*Characteristics.*—There is more or less complete loss of vision in that part of the field which is opposite to the detachment, causing the appearance of a dark cloud before the eye and a corresponding limitation of the field as shown with the perimeter. This is extensive and mostly in an upward direction.

Chief Signs.—Metamorphopsia and flashes of light; central vision preserved; ophthalmoscopic examination (grayish folds over which run tortuous, dark-red vessels).

Opacity of the Cornea.—*Characteristics.*—The visual field is reduced in the area covered by the opacity when it encroaches upon the pupillary area. Even slight opacities cause considerable visual disturbance on account of the resulting diffusion of light.

For causes of Opacity of the Cornea, see page 80.

Wood-Alcohol Poisoning (*Methyl-Alcohol Amblyopia*).—*Characteristics.*—The ocular symptoms are marked reduction of vision with peripheral contraction of the field and absolute central scotoma. Blindness often follows.

Chief Signs.—See page 113.

Quinin Poisoning (*Cinchonism*).—*Characteristics.*—Besides other symptoms of cinchonism there are contracted fields, more or less complete blindness, and marked pallor of the disks, with extreme contraction of the retinal vessels, and dilated pupils, often noticed suddenly.

Chief Signs.—See page 131.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—Impairment of vision may be an early symptom. The following varieties are found: (1) Amblyopia over the whole field with contraction of the visual area; (2) central scotoma, both of which may or may not be associated with optic atrophy, and may be confined to one eye; (3) hemianopsia and quadrantic loss of vision in other cases.

Chief Signs.—See page 94.

Glaucoma.—*Characteristics.*—There is progressive contraction of the visual field, especially on the nasal side, the reduction in extent of the color-fields corresponding to that of the form-shield.

Chief Signs.—See page 130.

Less Common Causes.—Acromegaly; cerebellar ataxia; embolism of the central artery; general paresis; insanity; nyctalopia; Raynaud's disease; rheumatoid arthritis; syringomyelia; tumor of the angular gyrus (opposite eye.)

DIMNESS OF VISION

(*Amblyopia*)

(See also "Color-Blindness," page 132, and "Blindness," page 129.)

Amblyopia is a symptom and describes the defective vision which a patient suffers. The term is usually employed to indicate defective vision unexplained by lesions in the eye or refractive error. Under this caption of dimness of vision will be included, however, obscurity of sight due to any cause, whether ocular or extra-ocular, the ocular causes being considered first.

Asthenopia (*Eye-Strain; Accommodative, Muscular, or Neurasthenic Asthenopia*).—*Characteristics.*—Blurring or dimness of vision with confusion of the lines of print follows use of the eyes for near work, often after indulgence for a short time only.

Chief Signs.—See page 72.

Astigmatism.—*Characteristics.*—There is always a diminution in the acuteness of vision both distant and near, varying with the degree and variety of the astigmatism; it is least with simple astigmatism, more with compound astigmatism, and most with mixed astigmatism. There is commonly considerable asthenopia, especially after the use of the eyes for near work.

Chief Signs.—See page 85.

Myopia.—*Characteristics.*—There is indistinct vision for distance, near vision being good. Symptoms of asthenopia follow use of the eyes for near work.

Chief Signs.—See page 88.

Presbyopia.—*Characteristics.*—The presbyope is compelled to hold reading, sewing, and other forms of near work farther away than the usual distance; with recession of the near point beyond the usual situation, the print becomes pale and indistinct, and fine print can be read only with great difficulty.

Chief Signs.—Occurrence after forty; asthenopia; distant vision unaffected.

Acute Conjunctivitis.—*Characteristics.*—There may be some blurring of sight when the altered secretion lies upon the cornea. Other subjective symptoms are usually more prominent and include photophobia, itching and smarting of the lids, heaviness of the lids, smarting pain in the eye, and a dull aching in the brow and temple.

For forms of Acute Conjunctivitis, see page 74.

Interstitial Keratitis.—*Characteristics.*—There is more or less interference with vision depending upon the intensity of the process. This gradually subsides during the process of absorption.

Chief Signs.—See page 80.

Opacity of the Cornea.—*Characteristics.*—This interferes with perfect vision when it involves or encroaches upon the pupillary area, the degree depending upon its density. Even slight opacities cause considerable visual disturbance on account of the resulting diffusion of light.

Chief Signs.—History of keratitis or corneal ulcer; presence of nebula, macula, or leukoma of the cornea.

Acute Iritis (*and Iridocyclitis*).—*Characteristics.*—The patient complains of marked diminution of vision, the degree depending upon the cloudiness of the anterior chamber, deposits in the pupil and upon Descemet's membrane, and upon transient myopia and astigmatism.

Chief Signs.—See page 75.

Exudative Choroiditis.—*Characteristics.*—There are disturbances of sight: diminution of vision due to opacities in the vitreous, distortion of objects, and a reduction or loss of vision in that part of the field which corresponds to the seat of exudation.

Chief Signs.—See page 125.

Sympathetic Ophthalmitis.—*Characteristics.*—Dimness of vision occurs when the eyes are used for near work. If the condition progresses to actual inflammation dimness of vision becomes more marked, and often progresses to blindness.

Chief Signs.—Presence of preceding and concomitant traumatic inflammation of the other eye; photophobia, lachrimation, tenderness in the ciliary region; circumcorneal injection; descemetitis; increased depth of the anterior chamber; contracted pupil; increased tension; progression to plastic uveitis, chorioretinitis, opacity of the vitreous, opacity of the lens, detachment of the retina, and atrophy of the eyeball.

Glaucoma.—*Characteristics.*—With each succeeding attack the diminution in vision becomes greater, until finally blindness ensues.

Chief Signs.—See page 130.

Cataract.—*Characteristics.*—There is diminished acuteness of vision, depending upon the situation and extent of the cataract. It is greatest when the opacity is central and diffuse, and least when it is peripheral. When central, the patient sees best in dim light—with dilation of the pupil. The interference with vision increases with the progress of the cataract, until finally there is mere perception of light.

For forms of Cataract, see page 107.

Retinitis.—*Characteristics.*—There is diminution in acuteness of vision varying with the severity and extent of the exudates, but generally considerable. Other visual disturbances are often present also.

For causes of Retinitis, see page 109.

Optic Neuritis (*Papillitis; Choked Disk*).—*Characteristics.*—Vision may be defective or entirely unaffected. Usually the vision of one eye is more affected than its fellow. Impairment of sight may come on rapidly or slowly.

For causes of Optic Neuritis, see page 111.

Optic Atrophy.—*Characteristics.*—There is reduction in the acuteness of vision, varying from a slight depreciation to blindness, and, if the atrophy is bilateral, usually more marked in one eye than in the other. Other visual defects are also present, as concentric contraction of the field, first for colors and then for form, diminution in the light sense, sometimes scotomata, and color-blindness.

For causes of Optic Atrophy, see page 112.

Toxic Amblyopia (*Chronic Retrobulbar Neuritis*).—*Characteristics.*—There is gradual diminution in the acuteness of vision and foggy vision, the patient seeing

better in the evening and the visual disturbance being more marked in bright light.

Chief Signs.—Occurrence in middle-aged or elderly men; history of excessive use of alcohol, tobacco, or other toxic agent; central color scotoma for red and green; at first, slight hyperemia of the disk, later often pallor of the temporal sides; improvement, permanent reduction of vision, or blindness.

Congenital Amblyopia.—*Characteristics.*—This term is used to describe that variety of defective vision present from birth which is for the most part unassociated with fundus lesions, although sometimes the papilla is discolored and the macula deeply pigmented, and there is scotoma, either small or absolute, or larger and for colors alone. It usually affects one eye and is frequently associated with high degrees of hypermetropia and astigmatism, though correction of the optical error usually fails to improve the vision materially.

Wood-Alcohol Poisoning (Methyl-Alcohol Amblyopia).—*Characteristics.*—The ocular symptoms are marked reduction of vision, peripheral contraction of the fields, and absolute central scotoma; blindness often follows.

Chief Signs.—See page 113.

"Hysterical" Amblyopia.—*Characteristics.*—The most constant symptom is a diminution in the acuteness of vision, and the field of vision is concentrically contracted. The color fields have not the same relative areas as in the normal eye. There may be central, annular, or irregular scotomata, or hemianopsia.

Chief Signs.—Those of a neurosis, often with hemianesthesia of the affected side.

Amblyopia Exanopsia.—*Characteristics.*—Defective vision, attributed to lack of use, may occur on account of obstruction to the rays of light falling upon the retina (congenital corneal opacities, congenital cataract, etc.); or in an eye which from early infancy has squinted, and has, therefore, not been concerned in the visual act.

Traumatic Amblyopia.—*Characteristics.*—Dimness of vision sometimes follows severe injuries to the head, especially in the occipital region and the region of the external angular process of the frontal bone; blows along the course of the spinal cord after railroad injuries; and blows upon the brow in the region of the supra-orbital nerve. There is no visible pathology, but probably a hemorrhage into the sheath of the optic nerve.

Reflex Amblyopia.—*Characteristics.*—Diminished vision is sometimes attributable to irritations in distant portions of the body—for instance, intestinal parasites and disease of the teeth.

Night-Blindness (Functional Nyctalopia).—*Characteristics.*—This is a functional defect of the retinal apparatus, often congenital, concerned with dark adaptation, in which there is reduction of vision in diminished light and constricted visual fields, especially for blue. This condition is also symptomatic of certain forms of secondary atrophy of the optic nerve, especially retinitis pigmentosa.

Chief Signs.—Absence of retinal changes.

Day-Blindness (Hemeralopia).—*Characteristics.*—Sight is better at dusk or in feeble illumination than in bright light.

Chief Signs.—Occurrence in toxia amblyopia, opacity of the lens or cornea, retinitis with central scotoma, albinism, coloboma of the iris and choroid, and irideremia.

Raynaud's Disease.—*Characteristics.*—Temporary amblyopia due to spasm of the retinal vessels is sometimes met with.

Chief Signs.—See page 329.

Tumor of the Angular Gyrus.—*Characteristics.*—There is crossed amblyopia, dimness of vision in the opposite eye, and great contraction of the field of vision.

Chief Signs.—Headache, vomiting, optic neuritis; mind-blindness.

Less Common Causes.—Postdiphtheritic paralysis; hereditary cerebellar ataxia; bromism; mercurialism; amenorrhea; pterygium (when covering the cornea); keratoconus; sarcoma of the choroid; glioma of the retina; acute retrobulbar neuritis; thrombosis of the central vein; pregnancy; malingering; arsenic poisoning; amaurotic family idiocy; leontiasis ossea.

BLINDNESS, TRANSIENT OR PERMANENT

(*Amaurosis*)

“Amaurosis” signifies loss of vision, the term usually being restricted to those cases not due to ocular disease. This caption, however, shall be inclusive of all causes of blindness, unilateral or bilateral.

Penetrating Wound of the Orbit.—*Characteristics.*—The eyeball may be destroyed, or the optic nerve injured, so that blindness results.

Fracture of the Orbit.—*Characteristics.*—If the apex of the orbit, involving the optic canal, is the seat of the fracture, the optic nerve may be injured. This may result either from direct injury or indirectly (contrecoup) and produce blindness without ophthalmoscopic evidence, followed in a few weeks by atrophy of the optic nerve.

Purulent Iridocyclitis.—*Characteristics.*—The entire uveal tract may be involved in the purulent process and terminates in blindness, shrinking of the eyeball causing atrophy of the globe. In other cases the disease extends to all the structures of the eyeball and terminates in panophthalmitis. These complications are especially common in cases following pyemia, septicemia, and meningitis.

Chief Signs.—Edema of the lid; circumcorneal injection; intense ciliary pain; chemosis; hypopyon; yellow reflex from the vitreous.

Ophthalmia Neonatorum (*Infantile Purulent Conjunctivitis*).—*Characteristics.*—The gonococcus cases, unless energetically treated from the outset, are frequently followed by permanent loss of vision. This is one of the great causes of blindness.

Chief Signs.—See page 75.

Suppurative Iridochoroiditis.—*Characteristics.*—In this affection the choroid, ciliary body, and iris are involved in a suppurative inflammation which leads to the destruction of the eyeball, and sight is rapidly lost.

Chief Signs.—See page 79.

Panophthalmitis (*Purulent Uveitis*).—*Characteristics.*—The entire eye is destroyed, sight being rapidly lost. The eyeball becomes shrunken.

Chief Signs.—History of penetrating wound, perforating ulcer, pyemia, orbital cellulitis, meningitis; general febrile symptoms; severe pain in the eyeball; swelling and redness of the lids; intense ciliary and conjunctival congestion; marked chem-

osis; anterior chamber full of pus; cornea clouded, yellow, and of increased tension; exophthalmos; rupture of pus through the anterior portion of the sclera.

Sympathetic Ophthalmitis.—*Characteristics.*—In the majority of cases, when inflammation sets in, blindness results. The retina is detached, and the eyeball shrinks and passes into the condition of atrophy.

Chief Signs.—See page 127.

Acute Glaucoma.—*Characteristics.*—The final result is that the eyeball either softens, shrinks and atrophies, or else there are ulceration and perforation of the cornea, followed by iridocyclitis, with subsequent atrophy of the eyeball, or panophthalmitis and phthisis bulbi.

Chief Signs.—See page 80.

Chronic Inflammatory Glaucoma.—*Characteristics.*—The final result is blindness.

Chief Signs.—As in acute glaucoma but less intense and more gradual in onset.

Simple Glaucoma.—*Characteristics.*—There is gradual loss of sight, with progressive contraction of the visual field and scotomata. Central vision is the last portion to be lost.

Chief Signs.—Insidious onset and chronic course; pupil somewhat dilated and sluggish; increased ocular tension; glaucomatous excavation of the disk and optic atrophy; foggy vision, colored halos around artificial lights, diminished accommodation, premature presbyopia.

Cataract.—*Characteristics.*—The interference with vision increases with the progress of the cataract, until finally there is mere perception of light.

For forms of Cataract, see page 107.

Retinitis.—*Characteristics.*—Certain changes may occur in the retina as a result of atrophy, causing considerable impairment or absolute loss of vision.

For causes of Retinitis, see page 109.

Optic Atrophy.—*Characteristics.*—There is progressive reduction in the acuteness of vision, progressing to complete blindness. In secondary atrophy the prognosis is better than in simple atrophy, and depends upon the extent to which the optic nerve has escaped from the destructive influences of the preceding process.

For causes of Optic Atrophy, see page 112.

Chronic Retrobulbar Neuritis (*Toxic Amblyopia*).—*Characteristics.*—If the poisoning continues vision may be lost. Early treatment, however, gives hope of improvement or even restoration of normal vision.

Chief Signs.—See page 127.

Uremia.—*Characteristics.*—A remarkable sequence of the convulsions is blindness, which may persist for several days. This, however, may occur apart from the convulsions, usually passing off in a day or two. There are, as a rule, no ophthalmoscopic changes. This phenomenon, while it may occur in the uremia of any form of renal disease, is more common in the acute nephritis of the eruptive fevers, especially scarlet fever, and of pregnancy, than in other varieties.

Chief Signs.—See page 102.

Wood-Alcohol Poisoning (*Methyl-Alcohol Amaurosis*).—*Characteristics.*—There is rapid failure of sight, which may improve, but soon relapses, ending in total or nearly total blindness.

Chief Signs.—See page 113.

Hemorrhage.—*Characteristics.*—Loss of sight often follows severe hemorrhage, more frequently if this is spontaneous than if it follows trauma, and is said to be most complete after hemorrhage from the stomach. It may also follow epistaxis, hemoptysis, urethral, uterine, and intestinal hemorrhage. Two very different results ensue: either a temporary blindness, owing to the impoverished blood-supply of the visual centers or retina; or a permanent loss of sight and atrophy of the optic nerve.

Quinin Poisoning (*Quinin Amaurosis*).—*Characteristics.*—The characteristic clinical features of taking large doses of the drug are total blindness, extreme pallor of the optic disks, marked diminution of the retinal vessels in number and caliber, and contraction of the visual field. The restoration of vision may be perfect or incomplete. The contracted field of vision gradually widens out, but does not regain its normal limits.

Chief Signs.—History of ingestion; deafness and tinnitus; may be permanent pallor of the disks.

Malaria.—*Characteristics.*—There may be transient loss of vision, or complete blindness, lasting from several hours to some days or even months, with negative ophthalmoscopic findings or only hyperemia. The affection may be unilateral or bilateral.

Chief Signs.—See page 525.

"Hysterical" Amaurosis.—*Characteristics.*—This is characterized by complete abeyance of the visual sensation. It occurs both as a unilateral and a bilateral affection, the former being more frequent. Occasionally the blindness lasts for a very short time and occurs during a crisis, at other times it lasts for weeks, months, and sometimes years. The eye-grounds are normal, and usually the pupils react to light. Deafness may alternate or come on at the same time. "Hysterical" amaurosis may occur in children. Generally it is possible to prove by ordinary prismatic, stereoscopic, and other tests that the supposed blind eye really sees.

Chief Signs.—See page 40.

Diabetes Mellitus.—*Characteristics.*—Sudden amaurosis, similar to that which occurs in uremia, may occur.

Chief Signs.—See page 344.

Malingering (*Pretended Amblyopia*).—*Characteristics.*—Patients sometimes pretend to be blind in one eye in order to escape military duty or to recover damages for alleged injury; occasionally bilateral blindness is simulated. The light-reflex remains. Several tests are used to detect the fraud. Bilateral simulation is more difficult of detection.

Cerebral Tumor.—*Characteristics.*—A tumor extensive enough and so situated as to involve the optic chiasma may cause bitemporal hemianopsia, total blindness in one eye and temporal hemianopsia in the other, or complete blindness. This is a different condition from the blindness due to the optic atrophy following the optic neuritis of increased intracranial pressure which occurs so commonly in tumors of the brain. A tumor involving both visual centers in the cuneus or the connecting tract between these centers and the corpora quadrigemina causes absolute blindness, the pupils still reacting to light.

Chief Signs.—See page 89.

Amaurotic Family Idiocy.—*Characteristics.*—There is gradual loss of sight, and death occurs before the end of the second year of life.

Chief Signs.—See page 110.

Less Common Causes.—Staphyloma of the cornea; glioma of the retina; embolism of the central artery; acute retrobulbar neuritis; orbital periostitis; orbital cellulitis; orbital tumor; tumor of the optic nerve; anophthalmos; buphthalmos; diphtheritic conjunctivitis; rupture of the globe; rupture of the sclera; iritis (with occlusion of the pupil); iridocyclitis; pertussis; sarcoma of the choroid; detachment of the retina; arsenic poisoning; small cerebral hemorrhage (may be transient blindness); small cerebral embolism (may be transient blindness); epilepsy (may be transient blindness); pregnancy (may be transient blindness); snow-blindness; excess of bromids, *Cannabis indica*, Felix' mas, santonin, salicylates, mercury, lead; amenorrhea; anemia of the brain (transient); chloroma; lightning stroke.

COLOR-BLINDNESS

(*Achromatopsia*)

The most commonly used and most convenient method of examination is Holmgren's test with a large assortment of colored worsteds. This collection consists of (1) certain colors called "test colors" (a pale green, a light pink, and a bright red), (2) lighter tints and darker shades of these colors ("match colors"), and (3) "confusion colors" (yellow, green, gray, drab, fawn, mauve, pale blue, etc.). The test must be made in good daylight. The pale-green sample is given to the individual and he is required to select colors which match the test sample; if he does this correctly he has normal color sense. If he not only selects similar colors but also confusion colors, and in addition shows a certain hesitancy, his color sense is defective. Next a pink skein is selected and the person examined asked to match this. If besides similar skeins he also selects blue or violet, he is red-blind; if he selects green or gray, he is green-blind. Finally, the bright-red test skein is given to be matched. If, besides red, he chooses green and brown colors darker than the red, he is red-blind; if he selects shades of these colors lighter than the red, he is green-blind. A person afflicted with blue-blindness sees only red and green; he usually confounds blue with green, purple with red, orange with yellow, and violet with yellow, green or gray. Other methods of a similar nature are used. The spectroscopic is also employed.

Congenital Color Amblyopia (*Congenital Color-Blindness*).—*Characteristics.*—This occurs in 3 to 4 per cent of males and in only 0.3 per cent of females. Both eyes are usually affected, and the functions of the eyes are otherwise normal. There is a distinct hereditary tendency in many cases. There is usually a loss of perception of one or two of the fundamental colors (red, green, or blue).

Optic Atrophy.—*Characteristics.*—Color-blindness sets in as the atrophy progresses; first the vision for green, then for red, then for blue is lost. There is concentric contraction of irregular or sector-shaped peripheral defects of the field, first for colors, then for form.

For causes of Optic Atrophy, see page 112.

Chronic Retrobulbar Neuritis (*Toxic Amblyopia*).—*Characteristics.*—There

is a central color scotoma for red and green, more marked for green than for red.

Chief Signs.—See page 127.

Optic Neuritis.—*Characteristics.*—The field of vision is usually contracted peripherally, especially for colors; there may be reversal of the color fields.

For causes of Optic Neuritis, see page 111.

Less Common Causes.—Dementia; diabetes mellitus; retinitis; multiple sclerosis; epilepsy; "hysteria"; chronic interstitial nephritis; action of lead, ergot, quinin, salicylates, carbon bisulphid.

BLIND-SPOTS

(*Scotomata, Muscæ Volitantes, etc.*)

Scotomas are dark areas within the limits of the visual field. A positive scotoma is one which the patient perceives as a dark spot in some portion of his visual field; a negative scotoma, although unperceived by the patient as a dark spot, is a limited area of the visual field within the confines of which an external object is not perceived and which is generally not discovered until the field is tested. This caption refers to spots which the patient himself is aware of, either as a dark spot or as a defect of the visual field.

Muscæ Volitantes.—*Characteristics.*—These are dark spots appearing before the eyes. They appear as grayish shadows which move with changes in the position of the eyes, having the shape of dots or globules collected into strings, or they may have any shape.

Chief Signs.—May be error of refraction or digestive disturbances; absence of structural change in the vitreous or other media.

Migraine.—*Characteristics.*—The headache may be and often is associated with scintillating scotoma. The attack begins with a central dark spot before both eyes, which spreads by scintillating and colored zigzag lines until there is a considerable gap in the field.

Chief Signs.—See page 6.

Opacity of the Cornea.—*Characteristics.*—An opacity involving the pupillary area causes a defect of the field of vision by obstructing the entrance of light rays.

Chief Signs.—See page 126.

Cataract.—*Characteristics.*—In the incipient stage the patient may complain of seeing spots which occupy a fixed position in the field.

For forms of Cataract, see page 107.

Opacities of the Vitreous.—*Characteristics.*—When these gravitate into the line of vision they cause scotomata, which vary, depending on the size and density of the opacity. They are usually movable, and the patient may be able to move the eyeball in a certain way so as to throw the opacity out of the line of sight.

Chief Signs.—Presence of myopia, disease of the uvea or retina, systemic disease, or injury to the choroid or ciliary body (resulting in hemorrhage); discovery of dark spots upon a red ground and movable when the eye is turned in various directions (with the ophthalmoscope at a distance).

Exudative Choroiditis.—*Characteristics.*—In the later stages of this ocular disease there may be defects in the field of vision due to peripheral scotomata—

earlier there will have been other disturbances of sight, as diminution of vision, distortion of the shape and size of objects, a reduction or loss of vision in that part of the field corresponding to the seat of exudation, and flashes of light, sparks, or bright circles before the eyes.

Chief Signs.—See page 125.

Simple Glaucoma.—*Characteristics.*—Scotomas are common; they may be central, paracentral, or peripheral; a very characteristic defect is often found directly continuous with the normal blind-spot.

Chief Signs.—See page 130.

Syphilitic Choroidoretinitis.—*Characteristics.*—Central or ring-shaped scotomata are common.

Chief Signs.—History and evidence of syphilis, congenital or acquired; diminution of visual acuity and of the light sense, night-blindness, distortion of objects, flashes of light; contraction of the field of vision; ophthalmoscopic examination (swelling of the retina and disk, dustlike opacities, scattered spots in the acquired form; leaden discoloration of the fundus with patches of pigment in the congenital form).

Chronic Retrobulbar Neuritis (Toxic Amblyopia).—*Characteristics.*—There is a central color scotoma which sometimes becomes absolute.

Chief Signs.—See page 127.

Retinitis.—*Characteristics.*—A hemorrhage produces a scotoma if the retinal tissue has been injured. Retinal metamorphopsia is often associated with a scotoma.

For causes of Retinitis, see page 109.

Optic Neuritis (Choked Disk).—*Characteristics.*—The normal blind-spot is enlarged and there may be hemianopsia or scotomata. Ring scotomata may be associated with choked disk caused by brain tumor.

For causes of Optic Neuritis, see page 111.

Optic Atrophy.—*Characteristics.*—In the atrophy of tabes bilateral central scotoma is of frequent occurrence. Central scotoma is also common in multiple sclerosis, being of a changeable and fluctuating course.

For causes of Optic Atrophy, see page 112.

Detachment of the Retina.—*Characteristics.*—There is a blind spot in the area of the detachment, causing the appearance of a dark cloud before the eye, and a corresponding limitation of the field as shown by the perimeter. The patients are also conscious of floating spots before the eyes, due to the frequent presence of vitreous opacities.

Chief Signs.—See page 125.

Tumor of the Pituitary Gland.—*Characteristics.*—Central and paracentral scotomas are common, especially the paracentral varieties; they may be situated to the outer side of each fixation point, that is, they are bitemporal scotomas. These scotomas may antedate the more elaborate visual field defects and they may expand into complete hemianopsia.

Chief Signs.—See page 122.

Less Common Causes.—Intra-ocular optic neuritis of meningitis and sinusitis; uveitis; coloboma of the choroid; foreign bodies in the vitreous; diabetes mellitus; macular hemorrhage; lead poisoning.

COLORED VISION

(*Chromatopsia*)

Patients with blind eyes occasionally complain of being conscious of colored lights, owing probably to irritation of the visual centers. Red vision may occur during ordinary mydriasis and in eyes which attentively regard a brilliantly illuminated surface.

Cataract.—*Characteristics.*—Following extraction erythropsia or red vision may be complained of. Visual acuteness is not affected, but everything appears of a red or violet color. Sometimes cyanopsia or blue vision is met with, rarely green, yellow, or white vision.

For forms of Cataract, see page 107.

Jaundice.—*Characteristics.*—In obstructive cases xanthopsia or yellow vision may occur.

For causes of Jaundice, see page 732.

Santonin Poisoning.—*Characteristics.*—At first objects appear of a bluish color to the patient, but this aberration is of comparatively short duration and in fact may pass unnoticed. It is followed by a much longer period of "yellow sight," during which objects that are brightly illuminated seem to have a yellow tinge, blue seems green, and violet is indistinct, although in dimmer lights the violet may still predominate. A second stage of "violet sight" occasionally intervenes before complete recovery.

Chief Signs.—History of use; mental confusion; nausea and vomiting; clonic twitchings or convulsions; yellow coloration of the urine.

Less Common Causes.—Tobacco scotoma (green or red vision); alcoholism (blue vision); wounds of the cornea (green vision); tabes dorsalis (green vision); retinal hemorrhage (red vision); hemorrhage into the vitreous (red vision); snow-blindness (red vision); digitalis poisoning (yellow vision); amyl nitrite poisoning (yellow vision); quinin poisoning (yellow vision); picric acid poisoning (yellow vision); *Cannabis indica* poisoning (yellow vision).

CHANGE IN THE SHAPE AND SIZE OF OBJECTS

(*Metamorphopsia, Micropsia, Macropsia*)

Exudative Choroiditis.—*Characteristics.*—Besides diminution of vision due to opacities in the vitreous and areas of exudation, there is distortion of objects (*metamorphopsia*) due to the displacement of the retinal elements over the inflamed focus; sometimes objects appear smaller than they really are (*micropsia*), sometimes larger (*macropsia*).

Chief Signs.—See page 125.

Retinitis.—*Characteristics.*—All forms of distortion of objects both in shape and size may occur. Objects appear to be reduced in size if they are crowded together; they also appear to undergo change in their contour and shape. Vertically placed parallel lines, on the one hand, appear to be bulged outward, and on the other, to be bent inward (fine parallel lines may appear wavy to a normal eye). Retinal *metamorphopsia* is often associated with a scotoma.

For causes of Retinitis, see page 109.

Detachment of the Retina.—*Characteristics.*—The patient is conscious of distortion of objects, as well as an appearance as of a cloud before the eye.

Chief Signs.—See page 125.

Less Common Causes.—Paralysis of accommodation with dilation of the pupil (micropsia); spasm of accommodation with contraction of the pupil (macropsia); epilepsy; fatigue of the retina; hashish poisoning; infantile delirium.

FLASHES OF LIGHT, SPARKS, BRIGHT CIRCLES

(*Photopsia*)

Exudative Choroiditis.—*Characteristics.*—In the early stages the patients are often much annoyed by subjective symptoms of light, as flashes of light, sparks, or bright circles before the eyes.

Chief Signs.—See page 125.

Detachment of the Retina.—*Characteristics.*—Should a patient with high myopia describe “attacks” of flashes of light, showers of sparks, or other types of photopsies, such symptoms are dangerously significant of impending retinal detachment.

Chief Signs.—See page 125.

Migraine (*Sick-Headache; Hemicrania*).—*Characteristics.*—Visual symptoms are found in about half the cases and when present always form the aura, or warning of the impending attack. Often there is a central scotoma, or defect in or abolition of the central vision. This spot enlarges from the center to the periphery, and as it expands laterally clears up centrally. In the central dim area spectral phenomena may appear—such as flickering light, or a central bright spot, or the edge of the spot takes on a zigzag shape, constituting the so-called “fortification spectrum.” At other times colored lights will be seen, or objects in constant vibration comparable to what is seen on the moving picture screen, sparks, or flashes of light. After a variable time these visual phenomena gradually subside, or suddenly disappear, to be followed by headache.

Chief Signs.—See page 6.

Epilepsy.—*Characteristics.*—Among the sensory warnings or auræ of this disease, flashes of light are sometimes noted. There may be, also, flickerings of light with zigzag, colored fortification spectra. Usually the auræ in this disease are quickly followed by unconsciousness and convulsions. In the event of the warning constituting the whole seizure, as it may occasionally do in the so-called epileptic equivalent, larval or minor epilepsy (*petit mal*), consciousness may or may not be temporarily impaired.

Chief Signs.—See page 46.

Less Common Causes.—Apoplexy (premonitory stage); cerebral anemia and hyperemia; delirium tremens; neurosis (“hysteria,” “neurasthenia”); insanity; meningitis; cerebral tumor; cerebral thrombosis; high myopia; tabes dorsalis.

THE EAR

SYMPTOMS	PAGE
Pain in the Ear (<i>Earache</i> ; <i>Otalgia</i>)	137
Swellings of the Ear	140
Discharge from the Ear (<i>Otorrhea</i>)	141
Bleeding from the Ear (<i>Otorrhagia</i>)	142
Gangrene of the Ear	143
Skin Affections of the Ear	143
Tinnitus Aurium (<i> ringing in the Ear</i>)	145
Sense of Fullness in the Ear	147
Deafness (<i>One or Both Ears</i>)	148
Heightened Hearing (<i>Hyperacusis</i>)	152
Deformities or Malformations of the Ear	153

PAIN IN THE EAR

(*Earache*; *Otalgia*)

Pain in the immediate neighborhood of the ear is included in this caption.

Acute Otitis Media (*Acute Purulent Otitis Media*).—*Characteristics*.—*Earache* soon becomes intense. It is throbbing, lancinating, boring, and not intermittent in character, although often found to be less in the morning than at night. With the advent of *otorrhea*, through spontaneous rupture of the drum or myringotomy, the pain rapidly ceases. Infants are unable to give expression to the suffering except by crying, which often amounts to agonizing shrieks. They are restless, roll the head with a boring motion, and seem to rest best when held in the lap with the affected ear downward. Children may develop *otitis media* with but little pain, if there is drainage through the eustachian tube. Even after *otorrhea* begins, pain may recur if the perforation becomes blocked. Certain cases of acute purulent *otitis media* run their entire course without pain, especially tuberculous and syphilitic forms. Pain is also absent if there has been a previous old perforation of the drum.

Chief Signs.—Acute onset following a “cold” or acute infection (measles, scarlatina); chill and fever, in children; may be convulsions or diarrhea, in children; *otorrhea* in one to three days from the onset; otoscopy if possible (reddening and bulging of the tympanic membrane, with absence of the light reflex).

Acute Mastoiditis (*Acute Purulent Mastoiditis*).—*Characteristics*.—In the common type there is intense deep-seated pain from the very beginning, with only a moderate amount of ear discharge. Pain is felt subjectively, but is particularly evinced upon pressure, first over the mastoid fossa (antrum) just behind the ear, then over the mastoid tip, and mastoid emissary vein. After perforation or incision of the drum the pain becomes less and remains less for a day or two as the otorrhea becomes established, then during succeeding days it gradually becomes more intense, and tenderness over the mastoid cortex is increased. The pain, while rarely as excruciating as in acute otitis media, is continuous, deep-seated, and radiates over the entire side of the cranium. There is a form of acute mastoiditis characterized by very profuse otorrhea which is almost painless.

Chief Signs.—May be history of acute otitis media or presence of a chronic purulent otitis; facial expression of anxiety and suffering, with the head inclined to the affected side; tension of a sternomastoid muscle; may be obliteration of the retroauricular fold with projection of the ear from the head; later, may be tender swelling over the mastoid cortex with local signs of inflammation; otoscopy (bulging of the posterior superior canal wall, bulging of the upper segment of the drum-head); may be continuous, obstinate otopyorrhea; x-ray.

Acute Tonsillitis.—*Characteristics*.—The tonsillar pain may radiate to the ear.

Chief Signs.—See page 237.

Furunculosis of the External Meatus.—*Characteristics*.—An indefinite sensation of soreness and fullness in the ear is the initial symptom. This is aggravated by any form of manipulation of the auricle. Pain soon becomes severe and continuous, remaining the most troublesome symptom throughout. It is greatly intensified by pressure and tends to radiate to the jaw. There is a tendency to nocturnal exacerbations and morning remissions. The pain is intensified by mastication.

Chief Signs.—May be deafness from occlusion of the canal; otoscopy (showing a circumscribed inflammatory area at some point in the canal); may be swelling of the lymph-nodes underneath the lobule and in front of the tragus; may be swelling of the superficial tissues external to the auricular attachment, and standing out of the concha.

Herpes Zoster of the External Ear (*Geniculate Syndrome*).—*Characteristics*.—A few hours after the initial malaise and slight fever, shooting pains are experienced in the external ear, becoming most severe in some cases, and subsiding upon the appearance of the vesicles. Paresthesia may exist for some time after the disappearance of the vesicles.

Chief Signs.—Swelling and redness of the skin of the auricle; appearance of a group of herpetic vesicles which remain five to eight days, then desiccate; recovery in two weeks; may be scars; may be facial palsy, facial palsy and hypo-acusis, or facial palsy with Ménière's syndrome accompanying the eruption.

Foreign Body in the Meatus.—*Characteristics*.—Insects, when alive, produce agonizing nerve-racking sensations akin to pain. Pain is severe when objects like beans or peas which swell when moistened lie against or lacerate the drum membrane. Sometimes a foreign body may remain quiescent, producing only the symptoms of impacted cerumen.

Chief Signs.—In children, the history of introduction; in adults, the wearing of

cotton plugs, picking the ears with toothpicks, or accident; otoscopy (visualization of the foreign body).

Otitis Externa Diffusa.—*Characteristics.*—The chief complaints are pain, tinnitus, and deafness. The pain varies with the severity of the attack, and is due to swelling and tension of the parts. It is aggravated by movements of the jaw.

Chief Signs.—History of trauma or infection; may be deafness from occlusion of the canal, and tinnitus from inflammation of the drum; presence of desquamations in the canal or on the drum, sometimes filling the canal; may be tenderness, swelling, and narrowing, so that the deeper parts cannot be seen; inflammation and thickening of the tympanum; may be ecchymoses, exudation, and discharge of serum or seropus, drying and tending to exfoliate, leaving angry-looking areas.

Mumps (*Epidemic Parotitis*).—*Characteristics.*—Pain usually precedes the swelling. It is usually referred to a point just below the ear in the region behind the jaw. It is increased by movement of the jaw, by pressure, and sometimes by the presence of acid substances in the mouth.

Chief Signs.—See page 54.

Acute Myringitis.—*Characteristics.*—The initial symptom is severe pain in the ear, often radiating in all directions, sometimes preceded by a sensation of fullness lasting for several hours. In severe cases the pain radiates over the parietal region.

Chief Signs.—Usually tinnitus with slight disturbance of hearing; may be some fever in young children; otoscopy (congestion, swelling, petechial or bleb formation involving the membrane); rapid resolution.

Tooth Disease (*Caries; Periodontitis*).—*Characteristics.*—Occasionally referred pain takes the form of earache, especially in disease of the upper molar teeth. There may be no pain whatever referred to the diseased tooth. Painful attacks may recur at irregular intervals and be relieved by analgesic measures without suspicion being aroused of their origin.

Chief Signs.—May be caries, "gum-boil," or no external evidence of diseased teeth; electrical and other tests for diseased teeth; x-ray; relief after removal of the offending teeth.

Acute Diffuse Glossitis.—*Characteristics.*—There are severe pains radiating into the ear and the region behind the ear.

Chief Signs.—See page 210.

Carcinoma of the Tongue.—*Characteristics.*—There may be pain of an intense persistent character deep in the ear. This ear pain may be present when there is little or no pain felt at the site of the growth.

Chief Signs.—See page 218.

Catarrh of the Eustachian Tube.—*Characteristics.*—Pain in the ear may be complained of, but is not usually severe. More prominent symptoms are a sense of fullness, subjective noises, and deafness.

Chief Signs.—See page 149.

Less Common Causes.—Aural polypi (when large); abscess of the auricle; otitis media neonatorum (pain slight); acute periostitis of the mastoid; perichondritis of the auricle; othematoma (feeling of tension); eczema of the meatus; innominate aneurysm; chloroma; cancer of the larynx; trigeminal neuralgia; impacted cerumen (may be radiating neuralgic pains); caries of the osseous external auditory canal; epithelioma of the auricle and external auditory meatus (early,

severe, and persistent pain); exostosis of the external meatus; trauma of the membrana tympani; sphenoidal sinusitis; pharyngitis; adenoids; temporomaxillary arthritis; erysipelas; Raynaud's disease; chilblains; "telephone ear"; postauricular lymphadenitis; pulpitis and pericementitis; alveolar abscess; pulp nodules.

SWELLINGS OF THE EAR

Sebaceous Cyst.—*Characteristics.*—About the ear the favorite site is the lobule and the space posterior thereto, at the junction with the temporal bone. The growth is soft to the touch, painless even upon pressure, and is slightly movable but attached to the skin at one point. It may rupture spontaneously, discharging a cheesy material.

Othematoma.—*Characteristics.*—Following an injury effusion develops, rapidly separating the perichondrium from the cartilage. The tumefaction is tense, with less sense of fluctuation than is usual in fluid sacs, and tends to obliterate the normal outlines of the concha.

Chief Signs.—History of direct violence (often in the insane); reddening of the cutaneous surface with a bluish tint; usually normal hearing unless the tumor encroaches on the lumen of the canal; absence of severe pain, usually disagreeable sensation of tension, heat, and itching.

Trauma (*Wounds, Stings, Burns*).—*Characteristics.*—Direct blows usually cause othematoma (see above). Wounds, particularly those which become infected, may be accompanied by diffuse swelling.

Acute Mastoiditis.—*Characteristics.*—In neglected cases, the retro-aural fold just behind the concha becomes obliterated by swelling and the ear may stand off from the head.

Chief Signs.—See page 138.

Papilloma of the Auricle (*Wart*).—*Characteristics.*—Warts are invariably small, being seldom larger than a small pea. Sometimes they appear as dense, horny offshoots with broad bases springing from the ring of the helix on the tip of the lobule.

Fibroma.—*Characteristics.*—The lobule is the usual seat, and the tumor varies in size from a millet seed to that of a hen's egg, often becoming sufficiently large to partially or wholly occlude the external meatus. The surface is usually smooth and hard, with few if any nodules, and the growth is rarely pedunculated. Keloid is a type of fibroma arising from an ear scar, and is more common in Negroes.

Erysipelas of the Ear.—*Characteristics.*—The infected area is swollen and red, and the swelling and redness spread somewhat rapidly, until sometimes the entire auricle is involved and the disease has attacked adjacent skin areas.

Chief Signs.—See page 57.

Gangrene of the Ear.—*Characteristics.*—In the phlegmonous form the enormous swelling of the concha tends to obliterate its normal outlines.

Chief Signs.—History of frostbite, phlegmon, diabetes; redness and infiltration; may be necrosis, sloughing, and ulceration.

Tophi.—*Characteristics.*—These appear as whitish chalky nodules at the margin of the helix.

Chief Signs.—Presence of gout.

Dermoid Cyst.—*Characteristics.*—Dermoids occur in front of or behind the ear. The tumor is globular, covered by normal and freely movable skin, and attached to the perichondrium. It plainly fluctuates when it has reached sufficient size.

Chief Signs.—Occurrence in infancy, childhood, or adult life; removal of a thick-walled, firmly attached tumor containing sebaceous matter, hair, or teeth, etc.

Perichondritis of the Auricle.—*Characteristics.*—The anterior surface of the concha becomes tumefied, with cutaneous redness, the tumefaction gradually extending until the normal lines of the concavity of the auricle become obliterated. If the swelling extends into the external meatus, hearing becomes impaired. The lobule remains normal. Fluctuation marks the appearance of the exudate, which detaches the perichondrium from the underlying cartilage.

Chief Signs.—May be history of furunculosis of the canal; burning sensation in the ear, followed by severe pain; sensitiveness and heat on palpation; may be suppuration.

Less Common Causes.—Acute eczema; herpes zoster; abscess of the auricle; macrotia (large ears); accessory auricles; redundancy of the helix; redundancy of the tragus; cystoma (appears suddenly); cavernous angioma (involves the jaw and face principally); epithelioma; sarcoma; furunculosis (usually in the canal); chronic parenchymatous nephritis and nephrosis (as a part of extensive edema); nevus; gumma; cirroid aneurysm; rodent ulcer; foreign body in the meatus; mumps (ear lobe may be raised); parotid abscess; diphtheria of the external auditory canal; enchondroma; acromegaly (hypertrophied ears).

DISCHARGE FROM THE EAR

(Otorrhea)

Under this heading are included those conditions which cause a discharge from the external auditory canal, predominantly serous, seropurulent, or purulent. Discharges predominantly bloody are treated below (see next symptom). Certain diseases of the auricle, such as eczema intertrigo, acute and chronic eczema, perichondritis, erysipelas, etc., produce a discharge from the auricle principally, and only incidentally from the meatus.

Acute Purulent Otitis Media.—*Characteristics.*—The otorrhea begins usually from one to three days after the advent of the disease. In children, rupture of the drum, hence the discharge, may be delayed because pus escapes through the eustachian tube. Rarely the discharge begins earlier. At the beginning it is mostly serous or serosanguineous, and generally it is profuse. Later it becomes thicker and more purulent. It gradually subsides and in from three days to five or six weeks it disappears.

Chief Signs.—See page 137.

Chronic Purulent Otitis Media.—*Characteristics.*—There is a chronic persistent aural discharge which may be exceedingly profuse, or intermittent and scanty. When profuse (otopyorrhea) it flows freely from the meatus, and tampons if worn require several changes each day. When scant it may be perceptible only as moisture in the canal. The discharge may be purulent, mucopurulent, or contain blood. It may emit a fetid odor as in cholesteatomatous otitis media, or a carrion-like smell if there is caries or necrosis of bone.

Chief Signs.—History of previous attack or succession of attacks of acute purulent otitis media, often associated with acute infectious diseases, adenoids, and hypertrophied tonsils; persistence of the otorrhea beyond eight to twelve weeks; progressive loss of hearing, and tinnitus; may be attacks of pain, vertigo, nausea, nystagmus, facial paralysis; otoscopy (pyorrhea, perforation, granulations, exostosis, polypi, cholesteatoma, sequestra); careful use of the probe.

Acute Purulent Mastoiditis.—*Characteristics.*—One form (less common) is characterized by lack of pain but profuse otorrhea, which becomes more and more purulent, refilling the canal as quickly as it is cleansed. The regular type of acute purulent mastoiditis is accompanied from the beginning by pain, but by a more moderate otorrhea.

Chief Signs.—See page 138.

Furunculosis of the External Meatus.—*Characteristics.*—The furuncle will rupture spontaneously, unless incised, in from two to eight days, according as the inflammation is superficial or deep-seated. The discharge is purulent, sometimes quite profuse, and its appearance is speedily followed by a subsidence of acute pain; the parts, however, remain sore for several days. A “core,” or small slough, usually exfoliates before the parts heal.

Chief Signs.—See page 138.

Otitis Externa Diffusa.—*Characteristics.*—Ecchymoses sometimes develop in the walls of the canal and after a few days rupture takes place, with a discharge of serum or seropurulent exudate. This discharge is exceedingly tenacious, and as it dries, it tends to exfoliate in masses, leaving inflamed, angry-looking, moist areas, which obliterate the normal landmarks.

Chief Signs.—History of infection, trauma, or excoriation of the canal; may be pain in the ear aggravated by movements of the jaw; may be tinnitus, vertigo, and impaired hearing; short duration.

Less Common Causes.—Epithelioma of the meatus; sarcoma of the meatus; gumma of the meatus; suppurating cyst of the meatus; diphtheria of the meatus; tuberculous otitis media; pachymeningitis; thrombosis of the lateral sinus; otomycosis; caries of the osseous meatus (usually mastoiditis); acute myringitis (moisture in the canal); foreign body in the meatus; fracture of the middle fossa of the base of the skull (usually bloody); aural polypi (usually bloody); rupture of the tympanic membrane (usually bloody).

BLEEDING FROM THE EAR

(Otorrhagia)

Fracture of the Base of the Skull (Middle Fossa).—*Characteristics.*—Blood and cerebrospinal fluid, rarely brain tissue, may escape from the ears, and occasionally from the nose or mouth. It should be recalled that bleeding from the ear may be caused by injury to the bone or cartilage, or by rupture of the tympanum without fracture of the base, and that a serosanguineous fluid may come from the mastoid cells and inner ear. Cerebrospinal fluid, though blood-tinged, may be recognized by its watery non-stiffening character, by the increase in flow on straining or coughing, and by chemical examination (presence of sugar).

Chief Signs.—See page 105.

Aural Polypi.—*Characteristics.*—In themselves aural polypi give no symptoms except occasionally when they may cause hemorrhagic discoloration of the aural discharge, or when they grow large enough to cause obstruction.

Chief Signs.—Presence of chronic purulent otitis media; otoscopy with probing (presence of soft, vascular, mobile, bleeding growth).

Rupture of the Tympanic Membrane.—*Characteristics.*—There may be a bloody or serous discharge from the ear.

Chief Signs.—History of direct injury to the drum, blow or fall upon the ear, or explosion; sharp pain which may last for several hours, and usually accompanied by dizziness and sometimes by nausea; exclusion of fracture of the skull; otoscopy (presence of the laceration and blood clots).

Less Common Causes.—Caisson disease; wounds of the external meatus.

GANGRENE OF THE EAR

Raynaud's Disease.—*Characteristics.*—The severer form may affect besides the fingers and toes, the tips of the ears, and tip of the nose. A severe attack of this sort may last three or four months, when the patient recovers with the loss of a snip off the edges of both ears, also the loss of two or three fingers and toes and the tip of the nose.

Chief Signs.—See page 329.

Frost-Bite.—*Characteristics.*—In frost-bites of the second degree, reaction is attended with great swelling and lividity, and the formation of blisters or blebs. The portion which becomes gangrenous turns black and may slough off.

Chief Signs.—History of exposure to the cold; pallor and numbness of the auricle.

Wounds.—*Characteristics.*—Wounds of the auricle are often slow in healing and are occasionally followed by necrosis of the cartilage.

SKIN AFFECTIONS OF THE EAR

Comedones or ordinary blackheads are ready recognizable and are fairly frequent upon the anterior and posterior surfaces of the ear.

Eczema (*Eczema Impetiginosum*).—*Characteristics.*—Points of intertrigo covered with impetiginous crusts are found in the antero-external folds of the ear and especially on the back of the ears in the retro-auricular fold. The eruption is usually vesicular or pustular, in fact an impetigo (see below under Retro-auricular Intertrigo).

Chief Signs.—Common occurrence in poorly nourished children.

Retro-auricular Intertrigo.—*Characteristics.*—There is at first a red humid epidermitis in the retro-auricular fold which discharges, forming crusts and fissures. Later, under the crusts the epidermis becomes macerated, and is covered with a pale lilac-colored fibrinous membrane.

Chief Signs.—Special frequency in children; bleeding on pulling the ear forward; chronicity; coexistence of impetigo or eczema elsewhere on the face or head.

Erythema Pernio (*Chilblains*).—*Characteristics.*—It may occur diffused over the whole ear or localized along the border. In the first, there is congestive reddish

violet edema with superficial desquamation. In the second, there is a succession of cracks with points of hard, painful edema.

Chief Signs.—Occurrence during the winter months.

Furuncle of the External Auditory Canal.—*Characteristics.*—On examination of the meatus with the speculum auris one sees the mucous membrane or skin raised up locally by a round swelling protruding into the canal, very painful on contact.

Chief Signs.—Excessive pain in the conduit out of proportion to the amount of pus, which is very small; evolution six to eight days; tendency to recurrence.

Seborrhea.—*Characteristics.*—In the oily form the skin has a smooth greasy appearance, and in the creases there is an accumulation of soft, sebaceous, flaky, dirty yellow material. In the dry form the creases are covered with fine flourlike scales or flakes.

Eczema Squamosum.—*Characteristics.*—Partly detached, partly adherent scales exist on the surface of the skin, limited to the external auditory canal and concavity of the concha.

Chief Signs.—Association with pityriasis simplex or steatoid of the scalp and nasolabial furrow; tendency to recur.

Tophus.—*Characteristics.*—Along the border (helix) of the ear, small roundish, or pointed, hard yellowish elevations appear. They may be, and frequently are, associated with the presence of gouty nodules or tophi elsewhere.

Chief Signs.—Presence of gout.

Keloid.—*Characteristics.*—There is a prune-shaped swelling occupying the lobe of the ear. It is rosy in color, hard and fibrous to the touch.

Chief Signs.—History of puncture of the lobule for earrings, or wound.

Syphilis.—*Characteristics.*—Condylomata of secondary syphilis may occur in the external meatus, causing a serous discharge which may have a very foul odor. Tertiary syphilitic ulceration may also occur at the orifice of the meatus.

Chief Signs.—History and evidence of syphilis (secondary or tertiary).

Lupus Vulgaris.—*Characteristics.*—The disease begins and has its principal situation when it attacks the ear, in the lobule, which is doubled or trebled in size. The typical lupic nodules are somewhat hidden in the congestive edema of the part but are brought out as reddish nodules under compression of a glass slide. The ulcerous type is rare on the auricle.

Chief Signs.—Occurrence in early life; absence of signs of syphilis; biopsy.

Lupus Erythematosus.—*Characteristics.*—There appear, often first on the tragus of the ear, a series of irregularly elongated red patches following the contour of the concha and bordered with white adherent scales. The atrophy of the skin affected makes the ear appear fleshless, which appearance remains after recovery. It may affect the ear exclusively, but more often involves simultaneously other portions of the face or scalp.

Chief Signs.—Occurrence in adults; chronicity; absence of subjective symptoms; no tendency to ulcerations; may be dilatation of the sebaceous glands.

Less Common Causes.—Molluscum contagiosum; papilloma; leprosy; carcinoma; rodent ulcer; otitis externa parasitica; otitis externa fungoides (otomycosis); pemphigus; pityriasis capitis; psoriasis; epithelioma of the auricle and external auditory meatus; erysipelas.

TINNITUS AURIUM*(Ringing in the Ear)*

Tinnitus is a symptom which occurs in a considerable number of ear diseases, but occasionally also when there is no obvious lesion of the auditory mechanism. The sounds complained of are usually subjective. Of course a distinction must be made between tinnitus and hallucinations of hearing, the latter usually taking the form of hearing voices, and indicating mental trouble, usually of a serious nature. A sort of "nervous tinnitus" is observed occasionally as an irritable condition of the auditory nerve in convalescence from severe febrile affections, in connection with sexual excesses, intemperance, overfatigue of the auditory nerve, and extreme mental disturbance.

Acute Middle-Ear Catarrh.—*Characteristics.*—Adults complain of a feeling of "fullness" in the affected ear and pressure within the head, usually combined with tinnitus aurium. The tinnitus is characterized as deeply pitched, is not of strong quality, and often is only observed by the patient during the evening hours. More rarely it is loud and clicking in character.

Chief Signs.—May be pain in the throat (eustachian tube), but not severe; may be adenoids and hypertrophied tonsils, in children; much impairment of hearing, the whispered voice being apprehended only near or at the concha, but with variations from deafness to normal hearing; hearing being usually worse in the recumbent position; autophonia; otoscopy (reddish drum, distortion of the light reflex, retraction of Schrapnell's membrane, foreshortening of the malleus, injected blood-vessels, especially about the malleus handle, absence of bulging, visible upper level of the fluid in the tympanic cavity).

Chronic Middle-Ear Catarrh.—*Characteristics.*—The tinnitus is rather superficial and the patients do not usually refer to it as deep-seated or within the head. It may partake of a ringing, clicking character, or it may sound like the escape of steam, or the humming of seashells. In the acute and subacute stages of the disease the clicking variety of tinnitus often indicates an obstruction of the eustachian tube. Tinnitus may at times be the first and only symptom complained of, even before loss of hearing is noted. It is usually more marked at night.

Chief Signs.—See page 148.

Otosclerosis (Ankylosis of the Stapes).—*Characteristics.*—Tinnitus and deafness are the principal symptoms. Tinnitus is severe, persistent, and prolonged, and is rarely absent at any stage of the disease. In patients who are not conscious of having lost some of their hearing faculty, the tinnitus will often become so severe that they are forced to seek relief. It is generally of a deep tone, but varies individually both in tone, character, and intensity. In nervous subjects severe and prolonged tinnitus often induces a profound neurasthenic state. The intensity of the tinnitus is no indication of the degree of loss of hearing.

Chief Signs.—Chronic progressive loss of hearing; exclusion of middle-ear and labyrinthine disease; otoscopy (presence of the "Schwartz symptom," *i.e.*, isolated areas of hyperemia in the mucosa covering the promontory as seen through an atrophied transparent drumhead); prolonged bone conduction; normal upper notes of the scale, decided loss of the lower notes.

Chronic Purulent Otitis Media.—*Characteristics.*—The degree of persistence of tinnitus is variable, some patients not complaining of this symptom at all, while in others it constitutes the most distressing symptom for which they seek relief. Tinnitus is neither so persistent nor distressing as that which occurs in non-suppurative middle-ear and labyrinthine affections. Violent tinnitus, especially when accompanied by vertigo and nausea, is an indication of labyrinthine involvement.

Chief Signs.—See page 141.

Impacted Cerumen.—*Characteristics.*—Complete occlusion of the canal, when it occurs, is immediately followed by a sensation of fullness in the ear, tinnitus, deafness and often vertigo.

Chief Signs.—See page 149.

Ménière's Disease (Labyrinthine Vertigo).—*Characteristics.*—In the milder forms there may or may not be both tinnitus and deafness. In the severer forms, there may be both tinnitus and deafness accompanying the vertigo, which last is the striking symptom in the syndrome.

Chief Signs.—Sudden onset with vertigo (even reeling); consciousness usually unaffected; may be nystagmus, nausea, clammy sweating of the face, and vomiting; Bárány's test.

Nasal Obstruction of Septal Origin.—*Characteristics.*—Tinnitus and chronic catarrhal otitis media are associated with nasal obstruction of septal origin.

Chief Signs.—Inability to breathe freely through the nose, mostly on the side of the septal convexity.

Drug Effect (Quinin, Salicylates).—*Characteristics.*—Ringing or roaring sounds in the ears, accompanied by slight deafness, are produced by moderate quantities of quinin, and large doses are not infrequently followed by loss of hearing for a time. When the dosage of salicylates is raised to the full therapeutic effect, ringing of the ears may occur.

Chief Signs.—History of use of the drug.

Hypertension with Arteriosclerosis.—*Characteristics.*—High blood-pressure in arteriosclerosis may produce tinnitus aurium and vertigo. If this occurs in one with considerable deafness, labyrinthine disease may be wrongly inferred.

Chief Signs.—See page 9.

Acute Anemia.—*Characteristics.*—Tinnitus aurium is common in anemia when due to sudden hemorrhage, external or internal.

Chief Signs.—See page 36.

Neurosis ("Neurasthenia"; "Hysteria").—*Characteristics.*—Tinnitus is the most frequent symptom of "neurasthenic" aural disturbances. The character of the tinnitus is variable, the noises changing from time to time, and it is aggravated by fatigue, anger, and emotions.

Chief Signs.—See page 40.

Purulent Labyrinthitis.—*Characteristics.*—Contrary to the importance which tinnitus aurium assumes in non-purulent affections of the labyrinth, this symptom is neither always present nor constant in the purulent form.

Chief Signs.—Variable fever; dull pain in the temporal bone; attacks of nausea and vomiting; impairment or complete loss of hearing; impairment or loss of bone conduction on the affected side; disturbances of coördination (vertigo, nystagmus, and ataxia); may be facial paralysis; Bárány's test.

Chronic Interstitial Nephritis.—*Characteristics.*—Auditory troubles are by no means infrequent; ringing in the ears with dizziness is not uncommon.

Chief Signs.—See page 754.

Aortic Regurgitation.—*Characteristics.*—Long before any signs of decompensation occur, the patient may complain of, and be annoyed by, throbbing of his arteries, accompanied by roaring in the ears.

Chief Signs.—See page 11.

Syphilis of the Internal Ear.—*Characteristics.*—The onset of the disease is sudden, with tinnitus, marked deafness, and vertigo. Intense tinnitus continues even after deafness becomes complete.

Chief Signs.—See page 150.

Uremia.—*Characteristics.*—Tinnitus may be present as a prodrome in cases of chronic interstitial nephritis accompanied with hypertension.

Chief Signs.—See page 8.

Chronic Myeloid Leukemia.—*Characteristics.*—Vertigo and tinnitus, symptoms suggestive of Ménière's syndrome, may come on quite suddenly, due to leukemic infiltration or hemorrhage into the internal ear.

Chief Signs.—See page 35.

Acromegaly.—*Characteristics.*—Tinnitus aurium is frequent and often distressing, especially on lying down.

Chief Signs.—See page 123.

Mountain Sickness.—*Characteristics.*—Ringing in the ears is not infrequent when atmospheric pressure becomes much reduced.

Chief Signs.—Ascension to high altitudes; headache; nausea; cyanosis; vomiting; hyperpnea; epistaxis; palpitation; intestinal disturbances; sometimes fainting.

Less Common Causes.—Aural polypus; nasal polypus; eustachian tube catarrh; acute suppurative otitis media (autophony); migraine; epilepsy (aura); tabes dorsalis; gout; malaria (quinin?); tobaccoism; postanesthetic state; excessive use of the telephone ("telephone ear"); chlorosis; pernicious anemia; chronic alcoholism; cerebral aneurysm; apoplexy (premonitory); cerebral concussion; catalepsy (premonitory); cervico-occipital neuralgia; cholera; delirium tremens; typhoid fever; pulsating exophthalmos; herpes auris; cardiac hypertrophy; mumps; myxedema; plethora; syphilis of the labyrinth; tapeworm; tumor of the brain; typhus fever; rupture of the tympanic membrane.

SENSE OF FULLNESS IN THE EAR

Impacted Cerumen.—*Characteristics.*—Complete occlusion is immediately followed by a sensation of fullness in the ear, deafness, tinnitus, and often vertigo.

Chief Signs.—See page 149.

Acute Myringitis.—*Characteristics.*—The initial symptom is severe pain in the ear, often radiating in all directions, sometimes preceded by a sensation of fullness lasting for several hours.

Chief Signs.—See page 139.

Chronic Middle-Ear Catarrh.—*Characteristics.*—A common symptom is described as a sensation of fullness and intratympanic pressure, which is due to the partial closure of the eustachian tube. The discomfort is marked.

Chief Signs.—See below.

Acute Purulent Otitis Media.—*Characteristics.*—There is a sense of fullness in the ears during the prodromal stage before the onset of pain.

Chief Signs.—See page 137.

Catarrh of the Eustachian Tube.—*Characteristics.*—The outstanding subjective symptom is a feeling of fullness in the ears, which may be constant or intermittent, and is accompanied by subjective noises and deafness. The patients apply for relief with the statement that the external canal is filled with cerumen. During mastication and swallowing they often obtain marked relief (though brief) from these sensations.

Chief Signs.—Often presence of acute or chronic epipharyngeal catarrh; posterior rhinoscopy (revealing the mucous membrane of the eustachian orifices and epipharynx reddened, swollen and covered with a thick mucous secretion); otoscopy (showing a more cupped and retracted drum, and diminution of the cone of light).

DEAFNESS

(One or Both Ears)

The word deafness is here used in the sense of inability to hear through some disturbance in the auditory exteroceptors in the organ of hearing. In the auditory aphasias (word-deafness) the patient hears without difficulty, but heretofore known symbols are now as though foreign. This is usually due to a subcortical lesion of the transverse temporal gyrus. Senile deafness occurring in the aged presents a gradual disappearance of sound perception, affecting both nerve and bone conduction. Postprandial deafness deserves mention, occurring especially when stimulants and tobacco have been indulged in too freely. Hearing is decreased during the act of yawning.

Adenoids.—*Characteristics.*—The deafness or partial deafness which occurs in more than a third of the cases is due to middle-ear catarrh (see below).

Chief Signs.—See page 160.

Acute Middle-Ear Catarrh.—*Characteristics.*—While deafness is a characteristic symptom, the power for sound perception varies widely in different cases. At times the patient hears almost normally, and at other times he is exceedingly deaf.

Chief Signs.—See page 145.

Chronic Middle-Ear Catarrh.—*Characteristics.*—The two most prominent symptoms are a gradually increasing deafness and tinnitus. There is no uniformity in the decrease in the hearing power, which frequently shows varying modifications, one of the chief being paracusis willisiana or a manifest increase of the hearing power in the presence of extreme noises. Occasionally individuals complain of painful sensations when in the presence of loud noises (dysacusis). Deafness may be either unilateral or bilateral during the early stages, but eventually both ears succumb to the catarrhal process. The deafness is aggravated by physical exhaustion, damp weather, and impairment of health. Various types of false hearing may be present, such as autophony and paracusis.

Chief Signs.—History of chronic inflammations and obstructive lesions of the nose and nasopharynx, as tonsillar hypertrophy, adenoids, enlarged turbinates,

deflected septum and chronic pharyngitis, or of chronic tubal catarrh, or of recurring and persistent acute inflammation of the rhinopharynx; insidious development, the patient being unaware of trouble until slight deafness or tinnitus is noted; pain and fullness in the ears during exacerbations; may be paracusis willisiana (increase of hearing power in presence of extreme noises); may be autophony; eventually bilateral deafness; otoscopy (showing congested, or lusterless, retracted drum with foreshortening of the malleus, altered light reflex with later translucency of the drum, and last, opacities, sclerosis, and lack of mobility); hearing tests.

Catarrh of the Eustachian Tube.—*Characteristics.*—There is usually complaint of deafness, but the sense of diminished hearing is often out of proportion to the actual deafness.

Chief Signs.—See page 148.

Impacted Cerumen.—*Characteristics.*—An extremely small channel seems to be sufficient to admit sound waves and maintain hearing. A change of position of the mass, due to jarring, or movements of mastication, may occlude the canal and cause deafness. The same result often ensues after bathing, when the moistened plug may swell. Complete occlusion is immediately followed by a sensation of fullness in the ear, deafness, tinnitus, and often vertigo. Autophony is a common symptom, *i.e.*, the patient's own voice sounds altered, loud or soft or distant.

Chief Signs.—May be slight neuralgic pains and nausea; otoscopy (revealing a brownish or blackish mass, easily removable by syringing).

Acute Purulent Otitis Media.—*Characteristics.*—There is usually a prodromal stage lasting a few hours, during which the ears feel "full," the patient's voice sounds unduly loud (autophony), and there are deafness and tinnitus. The patient thinks there is some obstruction in the external ear. This is followed by the excruciating pain, which continues until relieved by rupture of the drum membrane. With resolution the hearing usually gradually returns toward the normal.

Chief Signs.—See page 137.

Otosclerosis.—*Characteristics.*—Hardness of hearing and tinnitus are the principal symptoms. Progressive loss of hearing is a constant subjective symptom. This may develop so gradually that it is hardly noticeable to the patient at first. Nevertheless, during each year the impairment progresses until the human voice and other familiar tones are heard with difficulty or become lost entirely. So long as the labyrinth remains unaffected, high tones, like those of the singing voice or musical instruments, may be heard. Likewise the hearing is often quite good when the patient is in a noisy place (paracusis willisiana).

Chief Signs.—See page 145.

Purulent Labyrinthitis.—*Characteristics.*—In the majority of instances the hearing function in the affected ear not only is seriously impaired but completely destroyed, depending on whether the labyrinthitis is circumscribed or diffuse. Tests show impairment or loss of bone conduction on the affected side, and Weber positive toward the opposite ear. Whenever the purulent invasion is confined to the semicircular canals the impairment of the hearing function is partial, but deafness becomes complete when the cochlea is totally destroyed.

Chief Signs.—See page 146.

Acoustic Neuritis (*Nerve Deafness*).—*Characteristics*.—Deafness is the only symptom. Cases which follow explosions and loud noises present distinct loss of bone conduction, and they do not hear the whispered voice.

Chief Signs.—History of exposure to loud noises (explosions, factory noises), of ingestions of toxins (quinin, salicylates, tobacco, alcohol, lead), infectious diseases (particularly measles, scarlet fever, diphtheria, mumps), or diabetes or syphilis; absence of vertigo; absence of organic middle-ear disease.

Hay-Fever (*Hyperesthetic Rhinitis; Vasomotor Coryza*).—*Characteristics*.—Many cases have temporary deafness from extension of the catarrhal process to the eustachian orifices and nasopharynx.

Chief Signs.—See page 76.

Scarlet Fever.—*Characteristics*.—The ear complications of this disease rank among the most frequent causes of deafness in children. The severe forms of membranous angina are almost always associated with otitis, which goes on to suppuration and perforation of the drum, extending to the labyrinth and rapidly producing deafness.

Chief Signs.—See page 766.

Measles (*Morbilli*).—*Characteristics*.—Otitis media is not at all uncommon and may lead to perforation of the drum or mastoid disease; deafness of varying degree will be present. The coryza which always accompanies the period of invasion may become chronic and lead to enlarged tonsils and adenoids, which bring about a reduction of hearing.

Chief Signs.—See page 770.

Neurosis (*"Hysteria"*).—*Characteristics*.—"Hysterical" deafness may be complete and may alternate or come on at the same time with hysterical blindness.

Chief Signs.—See page 40.

Quinism (*Cinchonism*).—*Characteristics*.—The most constant early symptoms of larger doses of quinin are ringing in the ears, headache, and disturbed vision. With still larger doses there is deafness, at first partial, later complete.

Chief Signs.—History of quinin administration.

Hemorrhage into the Labyrinth.—*Characteristics*.—The deafness is sudden, accompanied by nausea, syncope, and vertigo, with a tendency to fall toward the affected side if it be unilateral.

Chief Signs.—May be history of arteriosclerosis, trauma, exposure to explosions, or some blood dyscrasia (leukemia, pernicious anemia, purpura hæmorrhagica); tinnitus aurium.

Ménière's Syndrome.—*Characteristics*.—There is sudden loss of hearing associated with tinnitus aurium, and vertigo, the last often to such a degree that the patient is unable to maintain his balance and falls to the ground. Usually the more alarming symptoms pass away within a few days, leaving, however, some deafness, tinnitus, and vertigo, which may remain for years, the deafness gradually getting worse until it is complete.

Chief Signs.—See page 146.

Syphilis of the Internal Ear.—*Characteristics*.—The onset of the disease is sudden and its appearance is characterized by marked deafness, tinnitus, vertigo, and disturbance of equilibrium. Deafness is less liable to be progressive than in otosclerosis. Intense tinnitus continues even after deafness becomes complete, but

the vertigo may disappear in a few months. Deafness is marked in most cases, generally both ears being affected to different degrees. The course is often very rapid, sometimes complete deafness occurring within a few days. Improvement when it occurs comes about very slowly.

Chief Signs.—Existence of syphilis in late secondary or early tertiary stage; may be enlargement of the mastoid lymph glands; positive Wassermann.

Congenital Syphilis.—*Characteristics.*—During the fourth to the eighth week the child develops rhinitis (the “snuffles”) which may extend into the nasopharynx, eustachian tubes, and middle ears, producing deafness.

Chief Signs.—See page 34.

Cerebrospinal Fever (*Cerebrospinal Meningitis*).—*Characteristics.*—Deafness may appear as early as the first day of the disease and as late as the fourth month of convalescence. In many patients who have recovered there is permanent deafness which may complicate attacks that have been exceedingly mild and only last at the most a week, with complete recovery otherwise. In young children this complication may occur at the earliest stage, and is due to inflammation of the auditory nerve. It is possible that the abortive form of cerebrospinal meningitis is in many cases the direct cause of deafness.

Chief Signs.—See page 89.

Mumps (*Epidemic Parotitis*).—*Characteristics.*—There may be earache, even otitis media, and slight impairment of hearing.

Chief Signs.—See page 54.

Furunculosis of the External Meatus.—*Characteristics.*—Deafness is not common, and when present is due to occlusion of the canal.

Chief Signs.—See page 138.

Foreign Body in the External Meatus.—*Characteristics.*—Unless producing distressing symptoms, a foreign body may remain undisturbed for an indeterminate period, during which it becomes encased in an admixture of cerumen and epithelial scales, and it may cause occlusion of the canal and consequent deafness.

Chief Signs.—See page 138.

Acute Myringitis.—*Characteristics.*—There is slight disturbance of hearing with tinnitus, following or accompanying the initial pain, which persists until the disease subsides.

Chief Signs.—See page 139.

Eczema of the External Ear.—*Characteristics.*—Whenever the external canal is involved the swelling may be sufficient to block off its lumen and produce temporary deafness.

Chief Signs.—See page 143.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—Deafness may develop, due to lesion of the auditory nerve. The acoustic nerve is occasionally involved in both cochlear and vestibular branches, producing unilateral or bilateral deafness, with vestibular nystagmus and Ménière-like crises (Bounier’s syndrome).

Chief Signs.—See page 89.

Cerebral Tumor (*Pontine*).—*Characteristics.*—A tumor growing in the lower part of the pons usually involves the auditory nerve, causing deafness; at the same time it will involve the sixth nerve, producing internal strabismus, and the seventh nerve, producing facial paralysis.

Chief Signs.—May be alternate paralysis (ipsilateral cranial nerve, contralateral hemiplegia); may be conjugate deviation of the eyes to the side opposite that on which there is facial paralysis; general symptoms of tumor (headache, vomiting, choked disk).

Chronic Interstitial Nephritis.—*Characteristics.*—Various forms of deafness may occasionally be encountered.

Chief Signs.—See page 754.

Uremia.—*Characteristics.*—Sometimes uremic deafness supervenes and is probably a cerebral manifestation. It may occur in connection with persistent headache, nausea, and other gastric symptoms.

Chief Signs.—See page 102.

Sporadic Cretinism (*Infantile Myxedema*).—*Characteristics.*—Deafness from adenoids or from middle-ear disease is very common, and has an important part in the failure of mental development.

Chief Signs.—See page 41.

Chronic Myeloid Leukemia.—*Characteristics.*—Deafness has frequently been observed; it may appear early, and possibly is due to hemorrhage. Features suggestive of Ménière's disease may come on quite suddenly, due to leukemic infiltration or hemorrhage into the semicircular canals.

Chief Signs.—See page 35.

Less Common Causes.—Purpura hæmorrhagica; herpes of the auricle; syphilitic rhinitis; syphilis of the middle ear; primary atrophy of the acoustic nerve; congenital atresia of the external auditory meatus; primary acute labyrinthitis; atrophy of the brain; chloroma; diphtheria; typhoid fever; cerebral hemorrhage; hydrocephalus; cancer of the labyrinth; lead poisoning; osteogenesis imperfecta; oxycephaly; pernicious anemia; typhus fever; caisson disease.

HEIGHTENED HEARING

(*Hyperacusis*)

Hyperacuteness of hearing is sometimes manifested by individuals recovering from the effects of anesthesia. Likewise it may be encountered in convalescence from acute febrile diseases.

Chronic Middle-Ear Catarrh.—*Characteristics.*—Various forms of hyperacusis, or paracusis may be encountered. One of these, autophony, consists of a vibration and echolike reproduction of the patient's own voice; it is present more particularly in the dry type of catarrh with undue patency of the eustachian tube. Another, the paracusis of Willis ("paracusis willisiana"), is present in some well-advanced cases, and consists of an ability to hear better in the presence of noises than in a quiet place, for example, in a car or train. Not infrequently the note of a tuning-fork will seem to be of a different character and pitch when sounded before an ear that is deaf than before the normal ear.

Chief Signs.—See page 148.

Neurosis ("Hysteria"; "Neurasthenia").—*Characteristics.*—Occasionally hyperacuteness of hearing may be present, especially oxyecia, or a temporary ability to hear music, or at least certain tones, at a much greater distance than others do

with normal hearing. Hyperesthesia acoustica, characterized by a disagreeable sensation experienced when musical sounds are heard, may be present.

Chief Signs.—See page 40.

Paracusis Duplex (*Diplacusis*).—*Characteristics.*—In some cases of acute otitis media, serous middle-ear catarrh, chronic suppurative otitis media, and hyperostosis of the bony capsule of the labyrinth, this variety of disturbed perception of sound is observed. It is characterized by the hearing of two tones for every sound produced, or in certain cases only for certain tones.

Chief Signs.—Presence of one of the diseases of the middle or internal ear, above mentioned, known to be concerned in its causation.

Alcohol and Tobacco Poisoning.—*Characteristics.*—Oxyecia, or ability to hear music at a much greater distance than normally, may be encountered.

Chief Signs.—History of chronic indulgence in either or both of these drugs.

Quinism and Salicylism.—*Characteristics.*—Hyperesthesia acoustica or disagreeable sensitiveness to musical tones or sounds may be present, though tinnitus aurium is much more frequently encountered.

Chief Signs.—History of ingestion of one or the other or both of these drugs.

Migraine (*Hemicrania; Sick-Headache*). — *Characteristics.* — Hyperesthesia acoustica has been occasionally noted as one among the protean sensory disturbances of this affection.

Chief Signs.—See page 6.

Trigeminal Neuralgia.—*Characteristics.*—Disagreeable hypersensitiveness to musical tones or sounds (hyperesthesia acoustica) may be occasionally met with.

Chief Signs.—See page 31.

Peripheral Facial Paralysis.—*Characteristics.*—In cases where the nerve to the stapedius is paralyzed, an increased sense of hearing (hyperacusis) may be present, especially to musical sounds.

Chief Signs.—See page 47.

Amaurotic Family Idiocy.—*Characteristics.*—In the first stage of the disease the infant may manifest an unusual acuteness of hearing, shown by sudden clonic starting when the examiner's hands are clapped together near the child's ear.

Chief Signs.—See page 110.

Less Common Causes.—Epilepsy (aura); hydrophobia; tetanus; cerebral tumor; acute gastritis; cerebrospinal meningitis; manic psychosis; tetanus; encephalitis; meningitis.

DEFORMITIES OR MALFORMATIONS OF THE EAR

Absence of the auricle is very rare.

Microtia.—*Characteristics.*—The auricle appears as a shapeless round mass, or rolled upon itself, or with the helix adherent to the tragus.

Congenital Fistula (*Fistula Auris Congenita*).—*Characteristics.*—There is an opening 0.2 to 0.6 of an inch in length, sometimes longer, leading obliquely inward more or less parallel to the meatus, and secreting a yellowish-white fluid, which, from retention, may form a fluctuating tumor. These fistulae are situated almost always from 0.4 to 0.8 of an inch above and in front of the tragus, although

exceptionally they have been found in the antitragus, lobule, crus heliciis, and behind or below the ear.

Macrotia.—*Characteristics.*—The auricle is abnormally large but otherwise well formed.

Polyotia.—*Characteristics.*—These appear as auricular appendages, small projecting masses near the auricle, sometimes composed of folds of skin and subcutaneous tissue merely, often containing irregular bits of cartilage. Exceptionally there is a duplicated auricle, more or less well formed, situated on the neck a short distance below the natural one.

Malposition and Irregular Formation of the Ear.—*Characteristics.*—In the commonest malposition the auricle is attached at such an obtuse angle to the head as to make it too prominent ("lop ear"). Irregularities in the normal formation of the ear may affect the helix and anthelix, the lobule, or the tragus, singly or combined. Minor variations in the scroll-like formation of the helix (border) are common, and consist of abrupt angles or other irregularity of outlines, as is observed in the "satyr-ear" with angular projection on top, or in a lack of development or overdevelopment of the part. The upper portion is the usual seat of faulty development, and here the helix is oftener absent than overdeveloped. At times, however, enormous overdevelopment of the helix is seen. The chief deformity of the anthelix is undue projection and division into two or three crura; it is sometimes absent altogether. The chief types of lobule deformity are the enlarged bulbous, the thin elongated, and the flat fan-shaped. The lobule may be absent or biped or have a horny excrescence. Deformities of the tragus are rare. It is sometimes much enlarged with a backward flare that partially or wholly covers the external meatus. Anomalous cartilaginous projections and supernumerary tragi are occasionally observed.

THE NOSE

SYMPTOMS	PAGE
Pain in the Nose	155
Redness of the Nose	157
Swellings of the Nose	158
Deformities of the Nose	158
Collapse of the Nostrils	160
Respiratory Dilatation of the Nostrils	160
Obstruction of the Nose	161
Watery Discharge from the Nose	163
Mucopurulent or Purulent Discharge from the Nose	164
Regurgitation of Fluid through the Nose	166
Epistaxis (Nosebleed)	167
Skin Affections of the Nostrils, Nose, and Cheeks	170
Loss of the Sense of Smell (Anosmia)	173
Sneezing (Sternutation)	174

PAIN IN THE NOSE

Acute Rhinitis (*Coryza*; "Cold in the Head").—*Characteristics*.—There is a sensation of fullness and pain about the nose and forehead.

Chief Signs.—Acute onset with sneezing, followed by increasing and gradually thickening nasal discharge; may be slight fever (100° – 103°); may be occlusion of the nares with irritation of the skin of the alæ and upper lip; anosmia; malaise; dull frontal headache aggravated if the sinuses are involved; resolution in eight to ten days.

Simple Catarrhal Frontal Sinusitis.—*Characteristics*.—Pain referable to the lower frontal region and root of the nose is often present. The pains and lower frontal headache due to disease of the frontal sinus may assume the form of sharp, shooting pains radiating into the eyes, or they may be full and heavy, and nearly constant; or they may consist of a dull feeling in the forehead, which is aggravated by leaning forward and which in females is especially well marked during each menstrual period. Pressure under the floor of the sinus at the inner angle of the orbit near the root of the nose usually elicits pain.

Chief Signs.—History of acute rhinitis; may be swelling, redness, and heat of the skin in the frontal region; tenderness upon pressure if redness and swelling are present; frontal headache limited to or originating on the side affected, often more severe at night, especially upon awakening while in bed, or in the morning, or in the acute form a daily pain beginning ten or eleven o'clock in the morning and leaving three or four o'clock in the afternoon; may be vertigo aggravated by stooping or rising; may be modification of resonance (timbre) of the voice; absence of purulent discharge.

Empyema of the Frontal Sinus.—*Characteristics*.—Pain is a prominent symptom even in the chronic form, and while it is located chiefly in the brow, it may extend into the root of the nose. It is worse on arising in the morning, disappearing as the day advances.

Chief Signs.—History of previous nasal trauma or disease, or some specific infectious disease, particularly grip or the exanthemata; tenderness on pressure or percussion, especially upon the orbital plate; increased nasal secretion, purulent or mucopurulent; aprosexia; anosmia; rhinoscopy (pus exuding from the space between the middle turbinate and the outer nasal wall); transillumination; x-ray.

Acute Ethmoidal Sinusitis.—*Characteristics*.—There is a disagreeable sensation of pressure, sometimes amounting to pain, at the root of the nose. The pain may be vaguely seated in the head, manifesting itself as a unilateral headache, becoming general. There is a sensation of fullness between the eyes and occasionally moderate pain in the ethmoidal region and about the nasal bones.

Chief Signs.—May be swelling and redness of the skin at the inner angle of the orbit with tenderness on pressure; may be a creamy, tenacious mucus, which the patient removes from his nose with difficulty; may be reflex rash on the face; may be tinnitus and asthenopia; may be asthmatic paroxysms and cough, or unilateral paresis of the soft palate; tenderness on pressure against the orbital plate of the ethmoid at the inner angle of the orbit; may be disturbance of equilibrium aggravated by stooping forward; may be parosmia.

Fracture of the Nasal Bones.—*Characteristics.*—There is severe pain in the bridge of the nose.

Chief Signs.—History of direct violence; displacement, usually depression of the nasal bones readily noticeable if seen prior to the onset of swelling; crepitation; epistaxis; may be emphysema; x-ray.

Furuncle of the Nostrils.—*Characteristics.*—Small but very painful boils form in the skin or mucous membrane attached to the subjacent cartilage at or just within the nostrils. Pain may be intense until they rupture or are incised, on account of the close attachment and unyielding nature of the tissue composing the parts.

Chief Signs.—Presence of red, elevated, tender boils, which, when well advanced, show at the center a yellowish elevation from the contained pus; enlarged lymph gland over the angle of the jaw.

Chronic Hypertrophic Rhinitis.—*Characteristics.*—There is a feeling of pressure or even of pain at the root of the nose, accompanying the characteristic chronic obstruction of the nasal passages.

Chief Signs.—See page 161.

Foreign Body in the Nose.—*Characteristics.*—Sometimes a foreign body will cause no noticeable symptoms, but in many instances it will cause pain and other subjective annoyance, particularly a sense of fullness.

Chief Signs.—History of accidental or purposeful introduction of an animate or inanimate body; may be nasal stenosis, usually unilateral, with mucopurulent discharge; rhinoscopy.

Nasociliary Neuralgia.—*Characteristics.*—There is pain at the root of the nose and in the brow and eyes, usually referred to the small district bounded by the supraciliary ridge above, the supra-orbital notch laterally, and the nasal bone below. Sometimes it extends to the tip of the nose.

Chief Signs.—Transitory character; absence of organic disease; immediate disappearance of pain on application of 5 per cent solutions of cocain high up in the anterior limit against the roof of the nasal fossa.

Abscess of the Septum.—*Characteristics.*—There is pain and a sensation of fullness referred to the middle of the nose.

Chief Signs.—May be history of trauma; may be swelling and nasal obstruction; foul mawkish odor of secretions; otoscopy (showing fluctuating tumor in one or both nostrils, reddish or slightly yellowish in color).

Nasal Gumma (*Tertiary Syphilis of the Nose*).—*Characteristics.*—Pain soon appears, is worse at night, and becomes intensified as necrosis develops.

Chief Signs.—History of syphilis; discharge of foul mucopus and scabs from the nose; presence of necrosed and loose bone on probing, especially involving the vomer; perforation of the septum; collapse of the nose or nostrils; nasal stenoses; presence of ulceration, granulations and scars; positive Wassermann; therapeutic test.

Acute Glanders.—*Characteristics.*—Usually a short period of incubation is followed by a painful swelling in the nose, associated with lymphangitis and severe systemic reaction.

Chief Signs.—History of exposure, usually to infected horse; appearance of nodules on the skin or mucous membrane of the nose increasing in size, breaking

down, and discharging at first a yellow glairy material, later bloody, thick, and offensive; inoculation of guinea-pig testicle; positive Mallein test.

Nasal Lupus.—*Characteristics.*—Pain and tenderness may be present.

Chief Signs.—See page 171.

Less Common Causes.—Maxillary antritis; sphenoidal sinusitis; chronic rhinitis (sense of fullness); atrophic rhinitis (irritation and dryness in the nose and pharyngeal vault); carcinoma; sarcoma; fibromata; phlegmonous rhinitis; coryza edematosa (itching); nasal polypus; nasal myiasis (fly larvæ); chancre of the nose; chronic purulent ethmoiditis (pain during exacerbations).

REDNESS OF THE NOSE

Acne Rosacea.—*Characteristics.*—The skin of the nose and in the region of the nose is of a deep red color; the vessels are dilated; the skin is thickened and lumpy, and acne lesions coexist. In advanced cases the nose may become extremely large and lobulated (rhinophyma).

Chief Signs.—May be history of gastric disturbance, exposure to extremes of temperature, intemperance; absence of subjective phenomena.

Furunculosis of the Nostrils.—*Characteristics.*—There may be redness at the margin of the nostril or of the tip of the nose when the furuncle is situated, as it usually is, in some portion of the cutaneous vestibule just within the anterior nasal opening.

Chief Signs.—See page 156.

Chronic Alcoholism.—*Characteristics.*—The venules of the cheeks and nose are dilated; the latter becomes red, enlarged, and may present the condition known as acne rosacea (see above).

Chief Signs.—See page 37.

Acute Rhinitis (Coryza; "Cold in the Head").—*Characteristics.*—The discharge often possesses an irritating quality which produces excoriation and redness of the skin about the nasal orifices and upper lip which may be aggravated by repeated friction in wiping the nose.

Chief Signs.—See page 155.

Erysipelas.—*Characteristics.*—Facial erysipelas often attacks the nose early (stage of invasion), showing slight redness over the bridge of the nose and on the cheeks. The skin looks red, and feels hot and tense. The first affected parts become gradually pale as the disease extends at the periphery.

Chief Signs.—See page 57.

Lupus Erythematosus.—*Characteristics.*—There is a sharply defined, often butterfly-shaped, red patch with elevated margins and depressed center covering the nose and its neighborhood.

Chief Signs.—See page 171.

Rhinoscleroma.—*Characteristics.*—The color of the skin of the nose varies from a red to a bluish or brownish red.

Chief Signs.—See page 158.

Less Common Causes.—Amenorrhea; dyspepsia; chronic hypertrophic rhinitis.

SWELLINGS OF THE NOSE

(See also "Deformities of the Nose," below.)

Trauma (*Bruising of the Nose*).—*Characteristics*.—Bruising of the nose is followed by tumefaction and sometimes ecchymosis.

Fracture of the Nasal Bones.—*Characteristics*.—Displacement of the bones is soon masked by swelling, which is occasionally added to by emphysema involving the root of the nose, the eyelids, and cheek, as a result of a rent in the mucous membrane of Schneider or a crack in the frontal sinus.

Chief Signs.—History of direct violence to the nose; pain; crepitus; blocking of nose by the clot; profuse epistaxis, soon checked; may be deformity; x-ray.

Rhinophyma.—*Characteristics*.—In advanced cases of acne rosacea the nose may become extremely large and lobulated, constituting the condition known as rhinophyma (see under acne rosacea, page 157).

Erysipelas.—*Characteristics*.—There is swelling and tension of the skin about the nose from the beginning, which rapidly increases, so that during the second day the eyes are usually closed.

Chief Signs.—See page 57.

Furunculosis of the Nostrils.—*Characteristics*.—There is more or less swelling of the end of the nose if the furuncle is near the tip, accompanied by redness, tenderness, and throbbing pain.

Chief Signs.—See page 156.

Acute Glanders.—*Characteristics*.—There is usually great swelling of the nose accompanied by pain and severe constitutional symptoms.

Chief Signs.—See page 156.

Rhinoscleroma.—*Characteristics*.—It begins as a hard, nodular infiltration or growth at the end or tip of the nose and spreads gradually deeper into the respiratory tract. The tissues become more and more thickened, until breathing is more or less occluded. The color of the skin varies from a red to a bluish- or brownish-red. The skin is traversed by small blood-vessels, and is usually slimy, though it may be finely wrinkled. Infiltration finally interferes with the movement of the lips and fauces, rarely with the eyes and ears. There is no pain but some tenderness on pressure. Likewise there is no tendency to ulceration or discharge.

Chief Signs.—Occurrence between fourteen and fifteen; history of residence in southwestern Europe; chronicity; biopsy (histological picture, presence of bacillus of rhinoscleroma); absence of syphilis or cancer.

Less Common Causes.—Cellulitis; myxedema; bites and stings; lipoma.

DEFORMITIES OF THE NOSE

Congenital Syphilis (*Hereditary Syphilis*).—*Characteristics*.—In severe cases the child may be born with the "snuffles" and later (fourth to eighth week) develop a marked rhinitis with seropurulent or bloody discharge. Ulceration takes place with necrosis of the bones, leading to a depression at the root of the nose and a deformity characteristic of congenital syphilis, the "saddle-back nose," in which the bridge is collapsed.

Chief Signs.—See page 34.

Fracture of the Nasal Bones.—*Characteristics.*—Displacement of the fragments of the nasal bones causes depression of the nose which is readily noticeable if seen prior to the onset of the swelling, and if not properly treated, afterward persists as a serious deformity.

Chief Signs.—See page 158.

Collapse of the Alæ Nasi.—*Characteristics.*—The nasal orifices are greatly narrowed, often mere slits, and the alæ are flaccid and collapse upon inspiration instead of being firm and resilient and dilatable as normally.

Chief Signs.—History of prolonged nasal obstruction and mouth-breathing. For causes of Obstruction of the Nose, see page 161.

Achondroplasia (Chondrodystrophy).—*Characteristics.*—The root of the nose is depressed. The achondroplastic dwarf is readily recognized on account of the normal head and trunk with the very short extremities.

Chief Signs.—See page 13.

Cretinism.—*Characteristics.*—The nose of the child is broad and flattened, the lips are thick, the tongue thick and often protruding from the partly opened mouth.

Chief Signs.—See page 41.

Myxedema.—*Characteristics.*—The nostrils of the adult are broad and thick, with a tendency to general obliteration in the face of the lines of expression.

Chief Signs.—See page 41.

Mongolian Idiocy.—*Characteristics.*—The bridge of the nose is flattened and the alæ are expanded. In the Mongol idiot there is a characteristic slant upward and outward of the “almond-shaped” palpebral fissures.

Chief Signs.—See page 42.

Rhinophyma.—*Characteristics.*—In advanced cases of acne rosacea the nose may become extremely large and lobulated, constituting the condition known as rhinophyma.

See under acne rosacea, page 157.

Acquired Tertiary Syphilis (Gumma of the Nose).—*Characteristics.*—A nasal gumma may break down and ulcerate, before which the cartilages and even the bony structures of the nose may melt away like wax as the destruction rapidly extends, thus producing in a short time the most hideous deformity. There may be collapse of the entire anterior third of the nose, sinking in of the entire nostril so that only slits project, or even complete destruction of the alæ, so that finally the anterior nares are represented merely by an irregular hole in the face.

Chief Signs.—See page 172.

Congenital Deformity of the Nose.—*Characteristics.*—The most common of the congenital deformities or departures from the general normal morphology of the nose are: a bulbous condition of the end or tip of the nose (“bulbous-nose”); an exaggerated form of the so-called “Roman nose” with a hump-like prominence of the nasal bones or bridge (“hook-, beak-, or hump-nose”); bending to either side of the median line (“twisted or crooked nose”). These deformities can all be much improved by surgery.

Dislocation of the Nose.—*Characteristics.*—In this deformity the lower portion of the nose and the upper lip are dislocated downward, where they may remain and become adherent to subjacent tissues. The openings of the nostrils may be on a

level with the gums and obstructed. Violent force, as a cyclone, is required to produce it.

Deflection or Deviation of the Septum.—*Characteristics.*—There is sometimes some deformity of the external nose, the tip of the nose being turned to one side of the bridge, which may be flattened.

Chief Signs.—See page 162.

Lupus Vulgaris.—*Characteristics.*—Deformity may be present if the alæ are involved; when limited to the septum it is rarely present. The deformity is brought about by ulceration and destruction of the parts involved.

Chief Signs.—See page 171.

Rhinoscleroma.—*Characteristics.*—The tissues at the end of the nose become progressively thickened until breathing is more or less occluded.

Chief Signs.—See page 158.

COLLAPSE OF THE NOSTRILS

Adenoids.—*Characteristics.*—If the adenoid vegetations are at all large they block up the posterior nares and compel mouth-breathing, which brings about a collapse or pinched condition of the nostrils, and, with the open mouth, gives to the face a vacant expression, the “adenoid facies.”

Chief Signs.—Occurrence usually in child life, between three and twelve years; may be depression of the superior maxilla about the nasal orifices; mucus or muco-pus in the nose, difficult to blow out on account of nasal obstruction; mouth-breathing; may be enlarged lymphatics along the sternomastoid; may be deformity of the chest; audible breathing during the day and loud snoring at night; toneless voice, indistinct articulation, and impaired hearing; palpation of a gelatinous, wormlike mass in the epipharynx.

Nasal Obstruction.—*Characteristics.*—Obstruction of the nares from any cause may produce a collapse of the nostrils, particularly upon inspiration, and when the obstruction endures sufficiently long the nostrils may become permanently partially closed, causing the “pinched-nose.”

For causes see Obstruction of the Nose, page 161.

RESPIRATORY DILATATION OF THE NOSTRILS

Lobar Pneumonia.—*Characteristics.*—Dilatation of the alæ nasi with each inspiration is one of the striking features presented by the pneumonia patient on the second or third day as he lies in bed, often on the affected side, breathing hurriedly with short expiratory grunts.

Chief Signs.—See page 357.

Bronchopneumonia.—*Characteristics.*—In children particularly, dilatation of the nostrils with each inspiration is an early and striking phenomenon.

Chief Signs.—See page 359.

Dyspnea.—*Characteristics.*—In all cases of severe dyspnea the nostrils may dilate to a greater or less degree according to the difficulty of inspiring air into the chest.

For causes of Dyspnea, see page 391.

Less Common Causes.—Acute serofibrinous pleurisy; collapse; perforation of the palate; retropharyngeal abscess; tetanus neonatorum; emotional excitement; neurosis.

OBSTRUCTION OF THE NOSE

Adenoids.—*Characteristics.*—The vegetations in the nasopharynx cause mechanical obstruction of the air currents through the nasal passages. The obstructive symptoms are inability to blow the nose, mouth-breathing constantly or only during sleep, and a nasal voice. There may be attacks of dyspnea at night, and when of long standing, chest deformities are present.

Chief Signs.—See page 160.

Acute Rhinitis (*Acute Coryza*; “Cold in the Head”).—*Characteristics.*—An attack of acute rhinitis is usually ushered in with a sensation of stuffiness or obstruction in the nose, which after a few hours becomes associated with a profuse watery discharge, and the mucosa, which was at first hyperemic, becomes so much infiltrated that one or both nostrils may become entirely occluded. The nasal obstruction commonly alternates from one nostril to the other. Mouth-breathing is the rule, especially during sleep, and the sense of smell is obtunded.

Chief Signs.—Sneezing; burning sensation in the nose; lacrimation; languor, fatigue, chilliness, and prostration; serous discharge, changing to mucopurulent; excoriation of the nasal orifices and upper lip; may be slight rise of temperature; exclusion of acute infection, especially measles.

Simple Chronic Rhinitis with Turgescence (*Alternating Stenosis*).—*Characteristics.*—The chief clinical phenomena are intranasal obstruction and increased secretion. The obstruction is usually more noticeable at night, is liable to be attended with complete occlusion of one or both nostrils, and may alternate from one side to the other. The swelling, hence the obstruction, becomes greater on the dependent side during sleep.

Chief Signs.—Tendency to chronicity and aggravation by environment; discharge, at first watery, later mucopurulent with the formation of crusts; hawking and spitting; tendency to acute exacerbations; dull pain over the bridge of the nose, headache, and aprosexia; changes in the nasal mucosa (engorged, boggy, soft, and covered with exudate); may be invasion of the eustachian tube and ear.

Chronic Hypertrophic Rhinitis (*Hyperplastic Rhinitis*; *Hypertrophy of the Turbinates*).—*Characteristics.*—The chief clinical phenomena are nasal obstruction, greatly altered secretions, and in many instances slight odor. When the obstruction is great and constant the patient becomes a “mouth-breather.” When the patient is in bed, first one nostril and then the other will be occluded, according to the side lain upon.

Chief Signs.—Chronicity; may be reflex eye symptoms (conjunctivitis, slight paresis of accommodation, irritable retina); may be anosmia; may be redness of the tip of the nose and acne; may be deafness, headaches, and feeling of pressure or pain at the root of the nose; bad breath, subjective or objective; may be cough, hawking and clearing of the throat, and sneezing; rhinoscopy (inferior turbinal enlarged, irregular and nodular anteriorly, and of mulberry shape at the posterior end; absence of pitting on probe pressure, as in turgescent rhinitis; absence of

marked contraction under adrenalin or cocain; hyperplastic swelling of large segments of mucosa).

Deviations or Deflections of the Septum.—*Characteristics.*—Where the deviation is marked, symptoms of unilateral obstruction to respiration and drainage are in evidence. The patient complains of inability to breathe freely through the nose, obstructed breathing being mostly on the side of the septal convexity. It is worse at night, and often causes mouth-breathing.

Chief Signs.—May be history of trauma; may be frontal headache, dizziness, or asthma; may be heavy or watery acrid secretion on blowing the nose, with post-nasal “dropping”; may be external deformity of the nose; may be epistaxis; rhinoscopy (showing ridging, convexity or twisting of the septum, cartilaginous or osseous).

Nasal Polypus (Myxoma).—*Characteristics.*—Nasal obstruction, partial or complete, is present after the polypi have reached sufficient size. If pedunculated and movable, the obstruction can be modified by the patient blowing them back and forth. If sessile, however, they cannot be thus moved.

Chief Signs.—May be watery discharge, especially in damp weather; diminished timbre of the voice or “nasal twang”; may be mouth-breathing, rhinorrhea, cough, asthma, anosmia, aprosexia, and sneezing; rhinoscopy (disclosing a grayish, semitranslucent tumor hanging in the middle meatus, moving with respiration and on probing, if pedunculated).

Sarcoma.—*Characteristics.*—This, the commonest malignant neoplasm of the nose, produces a progressive nasal stenosis.

Chief Signs.—Occurrence in childhood or young adult life; radiating neuralgic pain; recurrent epistaxis, later a more or less purulent discharge; appearance in the nasal cavity of a large, broad-based, funguslike tumor of hemorrhagic type; biopsy.

Carcinoma.—*Characteristics.*—Nasal obstruction is a common first symptom, accompanied by first a purulent and later a blood-stained discharge.

Chief Signs.—Occurrence usually after forty; persistent pain or burning over the cheek and later referred to the teeth or forehead; tenderness over the antrum on percussion, or the palate on pressure; x-ray, showing antrum opacity and distortion of the turbinates and septum.

Nasal Diphtheria.—*Characteristics.*—Sufficient obstruction develops to necessitate mouth-breathing, and the nasal occlusion is at first thought to be due to a foreign body in the nose. The child “snuffles,” sleeps a great deal, and takes food poorly on account of the nasal occlusion, and he may become cyanotic on attempting to nurse the breast.

Chief Signs.—Occurrence in children; profuse discharge of mucopus, producing excoriation of the nostrils, becoming blood-tinged; epistaxis; cervical adenitis; foul breath; fever; rhinoscopy (showing a membranous exudate upon the septum and turbinates); frequent association with disease in the pharynx; culture (Klebs-Löffler bacillus).

Hematoma of the Septum.—Unless of small size this produces marked obstruction to nasal respiration.

Chief Signs.—History of injury to the nose; presence of a large, oval, fluctuating tumor on rhinoscopic examination.

Abscess of the Septum.—*Characteristics.*—If the abscess is of any size there will be interference with breathing through the nose.

Chief Signs.—May be history of injury or infection; sense of fullness; pain; heat; sometimes fever and chills; mawkish odor; presence on rhinoscopic examination of a reddish or yellowish swelling containing pus.

Nasal Gumma (*Tertiary Syphilis of the Nose*).—*Characteristics.*—The development of gummata within the nose is always associated with a gradually increasing nasal obstruction.

Chief Signs.—See page 169.

Congenital Syphilis (*Hereditary Syphilis*).—*Characteristics.*—The syphilitic rhinitis or “snuffles” which develops characteristically from the fourth to the eighth week after birth impedes respiration through the nose considerably, so that the child nurses with great difficulty.

Chief Signs.—See page 34.

Hay-Fever (*Hyperesthetic Rhinitis*).—*Characteristics.*—Intermittent and alternate stenosis is present, brought about by varying degrees of turgescence of the soft parts. During the continuance of the nasal stenosis the patient suffers from the paroxysmal sneezing, headache, and lacrimation.

Chief Signs.—Seasonal occurrence and recurrence (summer and fall); onset with malaise, sneezing, serous discharge, headache; itching or burning sensation of the mucous membrane of the nose, eyes, and pharynx; acrid, excoriating secretion from the nose, becoming seromucous and even purulent in character; may be complications (sinusitis, otitis, asthma); tests for pollen sensitization.

Foreign Body in the Nose.—*Characteristics.*—There is unilateral nasal obstruction, later accompanied by discharge.

Chief Signs.—See page 156.

Less Common Causes.—Membranous rhinitis; sinusitis; aspergillosis; cyst of the middle turbinate; eczema; exostosis; nakra; osteoma; pharyngeal tumor; retropharyngeal abscess; rhinolith; rhinoscleroma; tubercle; typhus fever; variola; rhinitis caseosa; adhesions (synechiæ) of the septum; lupus; papilloma; fibroma; angioma; enchondroma; glanders; leprosy; actinomycosis; chronic purulent rhinitis; nasal myiasis.

WATERY DISCHARGE FROM THE NOSE

Acute Rhinitis (*Coryza*; “Cold in the Head”).—*Characteristics.*—After a few hours’ onset, during which the mucous membrane of the nose is dry, a profuse watery discharge begins, which later, however, becomes mucopurulent or purulent.

Chief Signs.—See page 155.

Hay-Fever (*Hyperesthetic Rhinitis*).—*Characteristics.*—There is a profuse serous discharge from the nasal mucosa which becomes seromucous and sometimes purulent in character.

Chief Signs.—See above.

Measles (*Morbilli*).—*Characteristics.*—During the period of invasion, lasting from three to four days, there will be “running at the nose” accompanied by sneezing, conjunctivitis, and fever.

Chief Signs.—See page 194.

Pertussis (*Whooping-Cough*).—*Characteristics*.—In the early catarrhal stage, there are symptoms of an early cold, with “running at the nose,” slight fever, and an incessant cough which does not subside.

Chief Signs.—See page 358.

Influenza (*La Grippe*).—*Characteristics*.—The respiratory form of this disease sets in with coryza accompanied with watery discharge from the nose, fever, and prostration.

Chief Signs.—See page 86.

Nasal Hydrorrhea (*Idiopathic Rhinorrhea*).—*Characteristics*.—The characteristic symptom is the periodical flow of watery or viscid fluid from one or both nostrils. Handkerchiefs soaked with the fluid become stiff upon drying. The outpouring of fluid is usually intermittent and absent during the night. It is copious, watery or slightly viscid, and opalescent; and although it may be more marked on one side of the nose than on the other, the flow usually comes from both nostrils.

Chief Signs.—Occurrence in adults; erratic intermissions; may be malaise, sneezing, and irritation of the nose; absence of fever; precipitation of mucin in the fluid on addition of alcohol or acetic acid; negative Fehling’s test.

Iodism.—*Characteristics*.—A not unusual effect of intolerance to iodids is the occurrence of a severe “cold in the head,” with profuse watery discharge from the nose, sneezing, lacrimation, discomfort in the nasal mucous membrane, and headache.

Chief Signs.—History of ingestion of iodids; may be laryngobronchial symptoms, mouth irritation, and skin eruptions.

Cerebrospinal Rhinorrhea.—*Characteristics*.—There is constant dripping of clear, watery fluid (not opalescent as in nasal hydrorrhea), free from taste, odor, or sediment. It is often unilateral. The handkerchief remains limp.

Chief Signs.—Onset usually spontaneous; may be symptoms or signs of increased intracranial pressure, absence of viscosity of the fluid; absence of precipitation of mucin by acetic acid, and presence of positive Fehling’s reaction (opposite of fluid in nasal hydrorrhea).

Less Common Causes.—Scarlet fever; German measles; cerebrospinal meningitis; arsenic poisoning; bronchitis; foreign body in the nose; iritis; lacrimation; polypus of the antrum; ametropia; rhinolith; asthma; trigeminal neuralgia; typhus fever; worms; nasal irritants (vapors); acromegaly.

MUCOPURULENT OR PURULENT DISCHARGE FROM THE NOSE

Acute Rhinitis (*Acute Coryza*; “*Cold in the Head*”).—*Characteristics*.—After a few hours the nasal obstruction, which is an early symptom, becomes associated with a profuse watery discharge. The serous exudate soon changes to a mucopurulent and therefore thicker discharge as a result of the increasing admixture of cellular elements, and meanwhile it diminishes in quantity. The discharge often possesses an irritating quality which produces excoriation of the skin about the nasal orifices and upper lip.

Chief Signs.—See page 155.

Simple Chronic Rhinitis.—*Characteristics*.—The discharge during the earlier

stages, while profuse, is of a watery character. As the condition becomes more chronic it becomes mucopurulent, with a tendency to the formation of crusts.

Chief Signs.—See page 161.

Measles (*Morbilli*).—*Characteristics.*—Acute coryza is characteristic of the initial stage of measles, and the discharge from the nose, which is at first mucoid, later becomes mucopurulent or purulent.

Chief Signs.—See page 194.

Empyema of the Antrum of Highmore (*Purulent Antritis*).—*Characteristics.*—The chief symptoms are discharge from the nose and pain. During all stages of an empyema of the antrum a purulent secretion into the middle meatus is present. A characteristic of the purulent discharge is its profusion in the morning and its partial or complete cessation during the day. The discharge is increased by recurrent colds to which patients with antral disease are subject. In old cases the discharge is fetid. In character it is mucopurulent or purulent, and in acute cases the color is bright yellow.

Chief Signs.—History of previous infection in the nose, repeated rhinitis, infectious disease, or carious teeth; pain, especially marked in acute cases, located chiefly about the eminence of the malar bone and in the infra-orbital region of the affected side, also pain and sensitiveness of the teeth of the upper jaw, with radiation of the pain to the orbit, the supra-orbital region, and toward the ear; tenderness on pressure or percussion over the anterior malar process, in the canine fossa, and intra-orbital region; intermittency of pain, with subsidence on free discharge; presence of subjective malodor, nasal obstruction, epistaxis, or eczema of the vestibule; aprosexia, insomnia, and nervousness; may be malar swelling; rhinoscopy (revealing pus flowing from beneath the middle turbinate; quick reappearance when wiped away with the patient lying ten to fifteen minutes on the unaffected side); transillumination (darkened antrum, infra-orbital region, and pupil); x-ray.

Empyema of the Frontal Sinus (*Purulent Frontal Sinusitis*).—*Characteristics.*—Increased nasal secretion, purulent or mucopurulent, is observed in all cases. The flow of pus is usually yellowish at first, later it becomes lighter in color.

Chief Signs.—See page 155.

Chronic Purulent Ethmoiditis.—*Characteristics.*—Pus discharge from the ethmoidal cells is the most prominent symptom. Unlike the maxillary antrum, the discharge from the ethmoidal cells is more likely to be constant, and it is more profuse when the patient is in an upright position. Furthermore there is a quick return of pus after wiping out the middle meatus. The discharge from the posterior group of ethmoidal cells flows into the superior meatus, and may be seen in the olfactory fissure between the septum and the middle turbinate; but in the main it flows backward into the postnasal space.

Chief Signs.—History of repeated attacks of acute ethmoiditis; inconstancy of pain except during exacerbations, when there is a dull, heavy sensation of pressure between the eyes and at the root of the nose, often radiating into the frontal region; rarity of tenderness except during exacerbations, when it may be elicited by pressure inward and backward at a point between the inner canthus of the eye and the nasofrontal and nasomaxillary sutures; rhinoscopy (revealing pus in the middle meatus external to the middle turbinate, excluding its emergence from the frontal or maxillary sinuses); x-ray.

Foreign Body in the Nose.—*Characteristics.*—When the foreign body has remained for long periods, there is a unilateral, mucopurulent, fetid discharge, and excoriation of the borders of the nostril and upper lip.

Chief Signs.—See page 156.

Nasal Diphtheria.—*Characteristics.*—At the onset there is a profuse discharge of mucopus which produces excoriation about the nostrils. This symptom, occurring suddenly in young children, should arouse suspicion, and a culture should be taken.

Chief Signs.—See page 162.

Chronic Purulent Rhinitis.—*Characteristics.*—The predominating symptom is a persistent discharge from both nostrils of a yellowish, viscid, mucopurulent fluid. While the rhinorrhea is not fetid, it is often so profuse that the nasal cavities become blocked and the excess flows backward into the pharynx and forward over the surface of the upper lip. Temporary relief from the obstructive discharge is obtained by blowing or washing out the retained secretion.

Chief Signs.—Exclusion on rhinoscopic and other examination of purulent sinusitis, foreign bodies, and tuberculous or syphilitic affections.

Congenital Syphilis (*Hereditary Syphilis*).—*Characteristics.*—A syphilitic rhinitis develops from the fourth to the eighth week (the “snuffles”), which is accompanied by a discharge, seropurulent or bloody in character.

Chief Signs.—See page 34.

Nasal Gumma (*Tertiary Syphilis of the Nose*).—*Characteristics.*—Necrosis and ulceration are accompanied by a discharge of foul mucopus, and the formation of masses of thick scabs, which are blown from the nose. Particles of necrosed bone with a foul stench may come away.

Chief Signs.—See page 169.

Sarcoma of the Nose.—*Characteristics.*—A more or less continued purulent discharge accompanies the later stages of the disease.

Chief Signs.—See page 162.

Carcinoma of the Nose.—*Characteristics.*—There is first a purulent and later a blood-stained discharge.

Chief Signs.—See page 162.

Less Common Causes.—Atrophic rhinitis; hypertrophic rhinitis; rhinoscleroma; ozena; rhinitis casciosa; empyema of the frontal sinus (pus visible about the infundibulum); acute ethmoiditis; gonorrhea of the nose; abscess of the septum; lupus; membranous rhinitis; rhinolith; necrosis; scarlet fever; tuberculous rhinitis.

REGURGITATION OF FLUID THROUGH THE NOSE

Cleft-Palate.—*Characteristics.*—Sucking is impossible or difficult, and food passes into the nose from the mouth. The deformity when congenital is often accompanied with hare-lip, and there is a characteristic nasal twang to the voice.

Chief Signs.—Examination of the mouth, revealing the deformity.

Postdiphtheritic Paralysis.—*Characteristics.*—Paralysis affecting the palate in diphtheria is fairly common, coming on in the second or third week of convalescence. The first symptom noted will be a return of liquids through the nose, causing a difficulty in swallowing. The voice has a nasal tone. Within two or

three weeks it disappears. Palatal paralysis may be the beginning of a multiple form of diphtheritic paralysis with loss of power of accommodation, lost reflexes, and paraplegia.

Chief Signs.—See page 90.

Retropharyngeal Abscess.—*Characteristics.*—Sometimes there is regurgitation of food through the nose or mouth.

Chief Signs.—See page 247.

Gumma of the Soft Palate (*Tertiary Syphilis*).—*Characteristics.*—Liquids and food pass through the perforations into the nose, and the voice sounds are similar to those in cleft-palate.

Chief Signs.—Presence on inspection of a hole or holes in the velum palati; history of syphilis with other tertiary manifestations; positive Wassermann.

Bulbar Paralysis (*Glosso-labio-laryngeal Paralysis*).—*Characteristics.*—Swallowing becomes difficult, owing partly to regurgitation into the nostrils, partly to the involvement of the pharyngeal muscles.

Chief Signs.—See page 43.

Less Common Causes.—Postoperative paralysis; myasthenia gravis; pseudo-bulbar paralysis; carcinoma of the palate (with perforation).

EPISTAXIS

(Nosebleed)

Hemorrhage from the nasal cavities occurs at all periods of life, but is especially common in the young, particularly at the age of puberty. Certain individuals are especially prone to nosebleed, and sometimes the disposition to it is hereditary. Exposure to extreme cold or heat, or to a rarefied atmosphere, as in the ascent of high mountains or in aeroplanes and balloons, may bring on epistaxis. It may occasionally result from the suppression of the menstrual flow or follow the sudden arrest of a habitual hemorrhoidal discharge (vicarious epistaxis).

Trauma.—*Characteristics.*—After picking or scratching the nose, especially in children, or following slight contusions, epistaxis may occur. If the blood flows from each side of the nose in equal amounts, it is somewhat suggestive of injury to the nasal bones, vault of the pharynx, or even fracture of the base of the skull (see below).

Chief Signs.—Rhinoscopy, revealing the source of the bleeding, usually a small septal abrasion near the anterior nares, from which a small scab has been picked, less commonly a more serious injury.

Foreign Body in the Nose.—*Characteristics.*—Nasal hemorrhage is common, but it is not constant. At times there will be merely a discharge streaked with blood.

Chief Signs.—See page 156.

Fracture of the Base of the Skull (*Anterior Fossa*).—*Characteristics.*—Fracture through the anterior cerebral fossa may open the frontal, ethmoidal, or sphenoidal cells and cause bleeding from the nose and mouth.

Chief Signs.—See page 105.

Deflection of the Septum.—*Characteristics.*—Attacks of epistaxis are com-

mon owing to the patient's interference with crusts on either the septum or spurs.

Chief Signs.—See page 162.

Nasal Diphtheria.—*Characteristics.*—As the disease progresses the nasal discharge becomes blood-tinged and true epistaxis may take place.

Chief Signs.—See page 162.

Typhoid Fever.—*Characteristics.*—Epistaxis, an early symptom, precedes typhoid fever more commonly than any other febrile affection (20 per cent). It is occasionally profuse and serious. During the later stages crusts are prone to form upon the nasal mucosa, which are picked by the delirious patient until bleeding ulcers are produced.

Chief Signs.—See page 701.

Measles (Morbilli).—*Characteristics.*—The coryza of measles may sometimes be accompanied by epistaxis, which occasionally is profuse enough to become serious. In the malignant type, or black measles, hemorrhages may occur from all the mucous membranes, including the nose, and also into the skin.

Chief Signs.—See page 194.

Scarlet Fever (Scarlatina).—*Characteristics.*—Epistaxis occurs in the hemorrhagic form of scarlet fever, together with hemorrhage into the skin and hematuria. The erythematous rash becomes likewise hemorrhagic (petechiæ).

Chief Signs.—See page 766.

Pertussis (Whooping-Cough).—*Characteristics.*—Epistaxis may appear as a complication, and is induced by the strain of the paroxysms of coughing upon the hyperdilated anterior septal vessels.

Chief Signs.—See page 358.

Essential Hypertension.—*Characteristics.*—Spontaneous epistaxis, sometimes readily recurring, often without known cause or from cold, heat, stress, etc., may be an important revelatory sign.

Chief Signs.—See page 9.

Chronic Interstitial Nephritis.—*Characteristics.*—Nosebleed is very common, and when not clearly explicable on other grounds should always lead to an investigation as to possible nephritis. It may be slight and oft-recurring; yet it may be severe enough to demand plugging the posterior nares. Epistaxis with various other types of spontaneous hemorrhage which may be seen, while commoner in advanced chronic interstitial nephritis, may be among the early symptoms.

Chief Signs.—See page 754.

Cirrhosis of the Liver (Alcoholic).—*Characteristics.*—Epistaxis is very common and sometimes very obstinate, large quantities of blood being lost. Hematemesis and melena are more common.

Chief Signs.—See page 34.

Scurvy (Scorbutus).—*Characteristics.*—While hemorrhages from the mucous surfaces are less common than those under the skin (ecchymoses), epistaxis is, however, frequent.

Chief Signs.—See page 199.

Jaundice (Icterus).—*Characteristics.*—Epistaxis, along with bleeding from other mucous membranes, occurs, but more rarely than hemorrhages of subcutaneous type. The tendency to bleeding in icterus is accompanied by delay in the coagula-

tion time of the blood (eleven to twelve minutes instead of three and a half to four).

For causes of Jaundice, see page 732.

Chronic Myeloid Leukemia.—*Characteristics.*—Hemorrhages of one type or another, at one or another period of the disease, occur in five-sixths of the cases, and nosebleed is the commonest form. A few rare cases are on record in which epistaxis or other hemorrhage was the first sign noted, but, as a rule, such hemorrhages as occur (including epistaxis) come later in the course of the disease, and are moderate in character.

Chief Signs.—See page 35.

Splenic Anemia (Banti's Disease).—*Characteristics.*—In the advanced stages epistaxis may supervene. The marked hemorrhagic tendency in the disease is toward hematemesis.

Chief Signs.—See page 524.

Hemophilia.—*Characteristics.*—Epistaxis is common in "bleeders," but it is so frequently seen in other conditions that its occurrence alone, even when repeated and the bleeding severe, does not justify the diagnosis of hemophilia. Epistaxis has proved fatal in this disease in twenty-four hours. In the slow-bleeding type, large blood tumors may form and project from the nose.

Chief Signs.—See page 825.

Gumma of the Nose (Tertiary Syphilis of the Nose).—*Characteristics.*—The nasal discharge is abundant after ulceration occurs, dark in color from admixed blood and tissue, and has a horribly offensive odor.

Chief Signs.—Development of symptoms five to fifteen years after syphilitic infection; presence in the nose of deep-spreading ulceration, with ragged edges and surrounded by an inflammatory zone, covered with a purulent and bloody secretion and yellowish-green scabs; bone destruction and perforation; may be nasal deformity; positive Wassermann.

Late Congenital Syphilis.—*Characteristics.*—In the later form of hereditary nasal syphilis, which is analogous to the tertiary stage of acquired syphilis, *i.e.*, occurring between the third year and puberty, infiltration, ulceration, and tissue destruction brings about a purulent, exceedingly offensive discharge, often streaked with blood.

Chief Signs.—See page 230.

Chronic Empyema of the Antrum.—*Characteristics.*—Occasionally there is epistaxis.

Chief Signs.—See page 165.

Tuberculosis of the Nose.—*Characteristics.*—Occasionally there is hemorrhage from the ulcerated area.

Chief Signs.—Chronicity; presence in the nose, usually on the anterior part of the septum, of a shallow ulcer, with irregular, slightly elevated edges, usually not surrounded by a zone of inflammation, its floor covered with a yellowish exudate; may be miliary tubercles on the floor and edges of the ulcer; thick mucopurulent discharge which may be fetid; absence of pain; presence of tuberculosis elsewhere, usually in the lungs; demonstration of tubercle bacilli in the exudate.

Sarcoma of the Nose.—*Characteristics.*—Recurrent epistaxis becomes a prominent symptom as soon as the surfaces of the tumor commence to ulcerate.

Chief Signs.—See page 162.

Lupus of the Nose.—*Characteristics.*—As the disease progresses ulceration is accompanied by a thick purulent secretion with occasional admixture of blood.

Chief Signs.—See page 160.

Acute Yellow Atrophy of the Liver.—*Characteristics.*—When severe symptoms set in, hemorrhages occur into the skin and from the mucous membranes, of which latter, epistaxis may be a manifestation.

Chief Signs.—See page 734.

Less Common Causes.—Nasal polypus; malaria; carcinoma of the nose; telangiectases of the nose; cardiac decompensation; phosphorus poisoning; pyemia; glanders; nitrous oxid anesthesia (particularly in phthisical subjects); adenoids; alcoholism; amenorrhea; aortic insufficiency; arsenic poisoning; bronchitis; nasal caries; chloroma; chlorosis; dengue; dysentery; emphysema; erysipelas; goiter; cardiac hypertrophy; menopause; myxedema; acute nephritis; paratyphoid fever; peritonitis; pleurisy; psittacosis; relapsing fever; remittent fever; salicylism; sandfly fever; cerebral thrombosis; enlarged thymus; tuberculosis; tumors of the neck; varicosities; worms.

SKIN AFFECTIONS OF THE NOSTRILS, NOSE, AND CHEEKS

Erythema Simplex.—*Characteristics.*—There is diffused redness of the skin, disappearing on pressure, and without thickening or elevation of the skin.

Chief Signs.—History of exposure to heat or cold, sun-rays, or x-rays, traumatism, or local irritation (drugs, soaps); may be slight burning.

Seborrhea Oleosa (Pityriasis).—*Characteristics.*—The nose is observed to be abnormally oily and often to have a dirty appearance from the adherence of dust. The sebaceous follicles may be the seat of dark-colored plugs, or an oily secretion may exude from them. The superficial blood-vessels about the nose may be enlarged. Comedones are usually present and consist of cylinders of fatty sebaceous material, often with a black top, which plug up the orifices of the sebaceous ducts. They can be easily expressed by the finger-nails or otherwise.

Acne Rosacea.—*Characteristics.*—The affected area, usually located on the nose and face adjacent to the nose, is of a deep-red color; the vessels are dilated; the skin is thickened and lumpy, and acne lesions coexist. In advanced cases the nose may become extremely large and lobulated, constituting what is known as rhinophyma.

Chief Signs.—Chronicity; usual absence of subjective phenomena.

Acne Vulgaris (Pimples).—*Characteristics.*—Acne of the nose is usually an accompaniment of the same disease upon the face or elsewhere. There is an aggregation of small papules, pustules, and comedones.

Chief Signs.—Occurrence between the ages of fifteen and thirty-five; may be history of anemia, menstrual, or gastro-intestinal disorders, or ingestion of certain drugs (iodids, bromids), but particularly of previous or concomitant seborrhea; absence of subjective symptoms; protracted course.

Furunculosis of the Nostrils.—*Characteristics.*—There is a red, painful swelling within the nose. There is edema and redness of the end of the nose with the formation of a slough. A slight local edema may remain, long after the disappearance of the furuncle.

Impetigo Contagiosa.—*Characteristics.*—There are yellowish crusts continually obstructing the nostrils and a continuous serous discharge from the nose running down over the upper lip. It usually complicates an impetigo of the face and often persists after it. During the night the crusts accumulate and obstruct the nasal orifices. In the morning the child usually picks off the crusts and the discharge recurs. Cultures show the presence of a streptococcus.

Lupus Vulgaris.—*Characteristics.*—Nine times out of ten lupus begins usually along the edge of the nostrils in the form of one or two slightly raised tubercles of rosy color, disappearing on pressure with a glass slide except for a yellowish point in the center. Gradually the tubercles increase in size and number and invade the *alæ nasi* or the lobe. It may evolve slowly with sclerotic changes, or rapidly with soft fungous, mutilating ulceration, serpiginous in character, healing in one direction while spreading in another. The ulcers are shallow, however, and their edges are soft and red. The bone is never involved. The disease usually begins in childhood or early adult life, and is not so common in this country as in Europe.

Pustular Folliculitis of the Nostrils.—*Characteristics.*—There is recurrent, chronic, mild pustulation attacking the root of the hairs within the orifice of the nose.

Recurring Erysipelas (*Erysipeloid*).—*Characteristics.*—The onset and symptoms are those of ordinary erysipelas, but much more moderate and attenuated. The invasion is not so sudden, the redness not so intense. There may be considerable swelling but not much pain, and its course is slower and attended by only slight constitutional reaction.

Lupus Erythematosus.—*Characteristics.*—The disease usually manifests itself in the region of the nose, and appears as small, red, slightly elevated papules, which are more or less scaly. An erythematous patch is gradually formed by the coalescence of these papules. The periphery of the patch is elevated and sharply defined, while the center is depressed and atrophied. The ducts of the sebaceous glands are dilated and often filled with sebum. The disease spreads very slowly, shows no tendency to ulceration, and rarely excites any subjective symptoms. Not infrequently the disease is observed to present itself as one or several patches on the nose and neighboring cheeks, which by growth gradually fuse together and form a large area with the narrow part over the bridge of the nose, and the outer portion stretching out on each side more or less symmetrically, like the outstretched wings of a butterfly ("bat's-wing disease").

Congenital Syphilis (*Hereditary Syphilis*).—*Characteristics.*—From the second week to the third month of life a severe coryza develops. The nasal mucosa is red and swollen and there is a profuse discharge, the irritating nature of which is shown by excoriation of the nasal orifices and upper lip. In some instances there are crusts. The name of "snuffles" has been given to this early luetic coryza. Occasionally mucous patches may be visible in the nose, and later necrosis of the cartilages and bones with sequestration and deformity may occur. The later form of hereditary nasal syphilis occurs between the third year and puberty and is characterized by gummatous infiltration, ulceration, necrosis, and destruction of tissue with consequent deformity.

Chief Signs.—See page 230.

Superficial Epithelioma.—*Characteristics.*—This form begins as a firm, circumscribed, reddish-yellow, waxlike papule. After the lapse of several months or years the papules become scaly, and the removal of the scales is followed by a slight excoriation, which in turn becomes covered with a slight, reddish-brown crust. The latter tends to adhere, and its repeated removal is followed by a raw surface, which is gradually converted into an ulcer. The ulcer has a prominent indurated margin, is irregular in outline, with uneven glazed base, and exudes a sanious, viscid secretion. It spreads very slowly, and sometimes becomes stationary or actually heals. More frequently the ulceration continues until in time it may destroy the nose.

Chief Signs.—Chronicity; absence of pain; absence of enlargement of the neighboring glands; absence of impairment of the general health.

Deep-seated Epithelioma.—*Characteristics.*—This begins usually as a deep-seated, red, shiny tubercle, but occasionally it commences from the superficial form (see above). A deep ulcer forms, with granular base, everted, indurated, reddish-purple edges, and secretion of blood-stained yellow fluid.

Chief Signs.—Lancinating pain; enlargement of the neighboring lymph glands; exhaustion; may be hemorrhages; cachexia.

Acquired Tertiary Syphilis (*Gumma of the Nose*).—*Characteristics.*—At first there is a gummatous infiltration of the mucous membrane, giving rise to local or diffuse swellings which are red or purplish-red in color, but later become pale. In the beginning these swellings are hard and do not pit on pressure with the probe, but later become soft and ulcerate, forming deep ragged ulcers surrounded by an inflammatory zone, which gradually spread, the surface being covered with a purulent, bloody, scabby (yellowish-green), abundant, dark, horribly offensive discharge. The cartilaginous septum, vomer, and nasal bridge may become destroyed in succession with sinking-in deformity ("saddle nose").

Chief Signs.—History of syphilitic infection five to fifteen years previous; presence of other syphilitic manifestations; positive Wassermann.

Tuberculosis of the Nose (*Secondary*).—*Characteristics.*—The most common manifestation is ulceration, the most common site being on the anterior part of the septum, though it may occur on the floor of the nose or turbinates, and may extend to the upper lip. The ulcer is shallow, with irregular, slightly elevated edges, usually not surrounded by a zone of inflammation, and its floor is covered with a yellowish exudate containing tubercle bacilli. Miliary tubercles may be seen upon the floor and edges of the ulcer. There is a thick mucopurulent discharge from the nose, which may become fetid. There is little or no pain. Occasionally there is hemorrhage from the ulcerated area. The ulcers show but slight disposition to heal, and if this does take place there is a marked tendency to recurrence. Instead of the characteristic ulceration the disease may present itself as a neoplasm, irregular in outline, of varying size, reddish in color, bleeding easily, and showing a strong tendency to break down and ulcerate. There may be some nasal obstruction.

Chief Signs.—Tuberculin test; biopsy; presence of tuberculosis elsewhere, usually chronic pulmonary tuberculosis.

Less Common Causes.—Chancre of the nose; secondary syphilitic rhinitis; rhinoscleroma; necrotic acne; hypertrophic acne; varicosities of the nose; passive congestion of the nose (heart failure); senile wart; hypertrichosis; nevus; telangi-

ectasis; angioma; xanthoma (extension from the eyelids); molluscum contagiosum; Darier's disease; glanders; farcy.

LOSS OF THE SENSE OF SMELL

(*Anosmia*)

The function of the olfactory nerves, which may be disturbed at their origin in the nasal mucous membrane (exteroceptors), at the bulb, in the course of the tract, or at the centers in the brain, is usually tested with oil of cloves or peppermint, or with musk, though any other substance with characteristic odor may be employed. The sense of smell is the most easily fatigued of all the senses, which accounts for rapid failure to note disagreeable odors in closed spaces soon after being exposed to them. Heightening of the sense of smell (hyperosmia), is a rare and unimportant symptom, sometimes observed in neurotics, especially certain hysterical women who are said to be able to recognize, like dogs, the difference between individuals by the odor. The term parosmia denotes a perversion or hallucination of the sense of smell. There are two general types—one, a perversion of a normal odor, and the other, a wholly imaginary odor. Both are usually disagreeable sensations (cacosmia). It is a common hallucination of the insane and occasionally is observed in epilepsy and "hysteria."

Acute Rhinitis (*Coryza*; "Cold in the Head").—*Characteristics*.—Temporary anosmia is a common symptom of ordinary "cold in the head," in which event it accompanies the swelling and engorgement of the intranasal mucosa and the consequent obstruction to the free access of air into the nasal passages. There may be also perversion of the sense of smell (and taste).

Chief Signs.—See page 161.

Acute Rhinitis of Infectious Diseases.—*Characteristics*.—In the more severe types of intranasal inflammation, especially when due to influenza (grip), measles, nasal diphtheria, and scarlet fever, the loss of smell may be prolonged and even permanent.

Nasal Obstruction.—*Characteristics*.—Any form of prolonged nasal obstruction may cause impairment of olfaction. Nasal polypi, septal deviations, enlarged middle turbinates, adenoids, tumors, and extensive hyperplasia are the chief obstructive lesions concerned in impairment of the sense of smell.

For discussion of these and other causes of nasal obstruction, see under "Obstruction of the Nose," page 161.

Chronic Hyperplastic Rhinitis.—*Characteristics*.—In advanced cases of long standing there is diminution or loss of the sense of smell (anosmia).

Chief Signs.—See page 161.

Empyema of the Frontal Sinus.—*Characteristics*.—Anosmia is one of the many discomforts complained of by these patients.

Chief Signs.—See page 155.

Chronic Empyema of the Antrum.—*Characteristics*.—Usually the sense of smell is impaired, and sometimes complete anosmia is complained of. A subjective malodor may be present.

Chief Signs.—See page 165.

Atrophic Rhinitis (*Ozena*).—*Characteristics*.—There is an extremely fetid odor, not unlike that of bone necrosis, from the nose, yet the victims of the affection rarely are conscious of it, inasmuch as the terminal filaments of the olfactory nerve have been involved in the atrophic process.

Chief Signs.—History of chronic rhinitis, nasal diphtheria, or sinus disease; hawking, spitting, and blowing the nose; extremely fetid breath; may be obstructed nose-breathing, reflex skin rashes, laryngitis, and anemia; otoscopy (showing patulous nares, scabs and pus, and atrophy of the mucous membrane, which has a dry, glazed appearance).

Chronic Purulent Ethmoiditis.—*Characteristics*.—Great impairment of the sense of smell occurs when the middle turbinates are swollen and press on the septum.

Chief Signs.—See page 165.

Cerebral Tumor.—*Characteristics*.—In tumors of the frontal lobe, anosmia may develop following a period of hallucinations of smell, if the tumor presses upon the olfactory pathway. In tumors of the parietal lobe, so-called "uncinate fits" may occur, in which there are attacks of olfactory disturbance (anosmia or parosmia) combined with subjective gustatory abnormalities.

Chief Signs.—See page 100.

Less Common Causes.—Occlusion of the nostrils; olfactory clefts; olfactory neuritis; rhinoliths; thrombosis; alcoholism; typhus fever; cerebellar tumor; arsenic poisoning; congenital absence of the olfactory bulbs; cretinism; embolism; facial paralysis; trigeminal paralysis; general paralysis (paresis); cerebral hemorrhage; tabes dorsalis; hydrocephalus; tobaccoism; iodism; hippocampus tumor; fracture of the ethmoid; fracture of the base of the skull; gumma of the nose; neurosis.

SNEEZING

(*Sternutation*)

Acute Rhinitis (*Acute Coryza*; "*Cold in the Head*").—*Characteristics*.—An attack of acute rhinitis is usually ushered in by sneezing, which is frequently repeated and which occurs with the slight indisposition, perhaps chilliness and headache, and sensation of stuffiness in the nose, which constitute the earliest symptoms.

Chief Signs.—See page 161.

Hay-Fever (*Hyperesthetic Rhinitis*).—*Characteristics*.—There is violent sneezing accompanied by intense itching of the nose and followed by a profuse watery discharge from the nostrils.

Chief Signs.—See page 163.

Measles (*Morbilli*).—*Characteristics*.—In the stage of invasion, for a few days, the child presents the symptoms of a feverish catarrhal cold with sneezing, running at the nose, redness of the eyes and lids, and cough.

Chief Signs.—See page 194.

Iodism.—*Characteristics*.—Symptoms of cold in the head accompanied by sneezing are the first observed.

Chief Signs.—See page 164.

Simple Chronic Rhinitis.—*Characteristics.*—Mild periodic attacks of sneezing occur.

Chief Signs.—See page 161.

Adenoids.—*Characteristics.*—Occasionally sneezing may occur. Recurrent colds and persistent cough in a young child should invariably lead to a suspicion of adenoids.

Chief Signs.—See page 160.

Bronchial Asthma.—*Characteristics.*—Occasionally chilly sensations with sneezing may occur as premonitory symptoms of an attack.

Chief Signs.—See page 358.

Pertussis (Whooping-Cough).—*Characteristics.*—Sneezing and signs of an ordinary coryza occur in the early or catarrhal stage.

Chief Signs.—See page 358.

Influenza (La Grippe).—*Characteristics.*—In the simple respiratory forms the disease sets in with sneezing and other symptoms of coryza, and presents the features of an acute catarrhal fever, with perhaps rather more prostration and debility than usual.

Chief Signs.—See page 86.

Foreign Body in the External Auditory Meatus.—*Characteristics.*—Sneezing is usually present, accompanying the nasal obstruction and serous discharge.

Chief Signs.—See page 138.

Nasal Polypus.—Sneezing accompanies the frequent acute coryzas which usually occur.

Chief Signs.—See page 162.

Deflected Septum.—*Characteristics.*—Sneezing accompanies the repeated attacks of acute rhinitis.

Chief Signs.—See page 162.

Nasal Irritation.—*Characteristics.*—Sneezing may be produced by a great variety of substances inhaled into the nose, such as pepper, dust, euphorbium, tobacco, ipecac, veratrum, etc. Some individuals appear to be more susceptible to nasal irritation than others and in these, indeterminate substances, such as house dust, smoke, etc., will provoke an attack.

Neurosis ("Hysteria").—*Characteristics.*—An occasional manifestation of "hysteroneurosis" may be long-continued attacks of incessant, uncontrollable sneezing which may actually last for a sufficient time, days or weeks, to bring about exhaustion of the patient. Here the explosive effort being repeated at such frequent intervals becomes a sort of imitation of the true act of sneezing. There will, of course, be no adequate cause found upon examination of the nose.

Chief Signs.—See page 40.

Less Common Causes.—Impacted cerumen; looking at bright lights (in some individuals),

THE LIPS

SYMPTOMS	PAGE
Swollen Lips	176
Local Swellings of the Lips	177
Herpes Labialis ("Fever Blisters")	178
Trembling or Twitching of the Lips	178
Skin Affections of the Lips (including ulcers)	179
Deformities of the Lips	180

For Pallor and Cyanosis of the Lips, see "Pallor or Sallowiness of the Face," page 31; and "Cyanosis," page 689.

SWOLLEN LIPS

(See also "Local Swellings of the Lips," page 177.)

Large, thick lips are a racial characteristic of the Negro; full lips in white races are said to mark a phlegmatic temperament or to indicate a tendency to the worship of Bacchus and Venus.

Trauma.—*Characteristics.*—Acute swelling with purplish discoloration often follows a blow on the lips or biting of the lips.

Chief Signs.—History of a blow or bite; pain and tenderness.

Bites and Stings.—*Characteristics.*—Enormous puffing of the affected lip often follows.

Chief Signs.—History of insect bite or sting; pain and tenderness.

Abscess of the Lip.—*Characteristics.*—The lip is swollen, hot, red, painful, and tender. There develops fluctuation and pointing.

Chief Signs.—History and evidence of wound of the lip; constitutional symptoms.

Lymphangitis (Cheilitis).—*Characteristics.*—Chapped lips may become inflamed and swell up, forming probosciform eminences.

Chief Signs.—Occurrence in winter; presence of cracks or fissures; vascular turgescence.

Carbuncle of the Lip.—*Characteristics.*—Staphylococcus infection sometimes occurs in the upper lip, causing a brawny swelling. Numerous pustules appear and sloughing usually takes place. There is much pain.

Chief Signs.—Constitutional symptoms; may be serious complications (meningitis, cavernous thrombosis, brain abscess).

Macrocheilia.—*Characteristics.*—This is a hypertrophy of the lip, usually the lower. Either lip may be enlarged from the habit of lip-sucking. Permanent simple enlargement of either lip often persists to an annoying extent after malocclusions have been corrected.

Chief Signs.—May be congenital (lymphangioma), syphilitic (tertiary), tuberculous (strumous lip), or due to elephantiasis (lymphangiectasis).

Angioneurotic Edema.—*Characteristics.*—This affection may involve the lips, but not as commonly as the eyelids. The lip may be swollen to such a degree that the mouth cannot be opened.

Chief Signs.—May be hereditary history; history of preceding attacks, rarely in the same locality (eyelids, cheeks, hands, genitalia, legs, throat); sudden appearance and transient duration, possibly preceded by itching, heat, redness, urticaria; may be colic, nausea, vomiting.

Myxedema.—*Characteristics.*—The lips are thick. This feature, however, is merely a part of the altered physiognomy of the patient, the face being swollen and broad, the nostrils thick and broad, the mouth enlarged, and the skin dry and coarse.

Chief Signs.—See page 41.

Cretinism.—*Characteristics.*—The lips are thick as in myxedema, but this is not as striking a feature as the large, protruding tongue.

Chief Signs.—See page 41.

Less Common Causes.—Alveolar abscess; adenoids; glandular cheilitis; military cheilitis; stomatitis; corrosive poisoning; chancre; cancrum oris; epilepsy; jagged teeth; ulcer; worms; acromegaly.

LOCAL SWELLINGS OF THE LIPS

Mucous Cysts.—*Characteristics.*—These appear as rounded, translucent swellings, caused by blocking of the orifices of the glands. The cysts are thin-walled and filled with a glairy, clear fluid.

Epithelioma.—*Characteristics.*—This begins as a slight induration or warty growth on the lower lip, which develops into a shallow ulcer with crusted surface. A leukoplakia may precede the appearance of the cancer in some cases.

Chief Signs.—See page 179.

Nevus (Angioma).—*Characteristics.*—A "birth-mark" sometimes occurs on the lip. It is a soft, dusky swelling, consisting of blood-vessels. Compression diminishes its size, which returns after withdrawal of the fingers.

Chancre.—*Characteristics.*—The developed lesion is round, slightly elevated, of almost cartilaginous consistency, involves the deeper structures, and has a flat, red, only slightly ulcerated surface with no discharge.

Chief Signs.—See page 179.

Wart (Verruca).—*Characteristics.*—Warts are sometimes seen on the lips and have the same characteristics as elsewhere, namely, rough, hard, papillated protuberances.

Less Common Causes.—Granuloma; plaque muqueuse; perlèche; papilloma endothelioma.

HERPES LABIALIS(*"Fever Blisters"*)

Coryza (*Acute Rhinitis; Common "Cold"*).—*Characteristics*.—Occasionally there is an outbreak of labial or nasal herpes.

Chief Signs.—See page 161.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics*.—Labial herpes occurs more frequently in this than in any other disease (12 to 40 per cent). It is supposed to be of favorable prognosis. It appears about the second or third day. Herpes may also occur on the nose, genitals, and anus.

Chief Signs.—See page 357.

Malaria.—*Characteristics*.—Herpes labialis is almost as frequent in the intermittent fever of malaria as in pneumonia.

Chief Signs.—See page 525.

Cerebrospinal Meningitis (*Cerebrospinal Fever*).—*Characteristics*.—Herpes occurs with a frequency almost equal to that of pneumonia or intermittent fever.

Chief Signs.—See page 8.

Herpes Simplex.—*Characteristics*.—One or several groups of tiny vesicles appear on the lips with an edematous base and areolæ. At first small, the lesions often increase in the course of some hours or one to two days to the size of a small pea. There is heat or burning and, rarely, itching. After several days, or earlier in slight cases, they begin to dry up, and form a thin crust, which in the course of two or three days drops off. Sometimes one or two of the vesicles are broken and the patch is then excoriated at these points, and serum oozes out, which dries to a thin yellowish crust. The crust drops off in from several to ten days after the onset of the disease. The eruption is most common on the cutaneous surface of the lower lip near the commissure.

Chief Signs.—May be slight fever; slight tender adenitis at the onset.

Less Common Causes.—Appendicitis; foot-and-mouth disease; chronic arsenic poisoning; Weil's disease; remittent fever.

TREMBLING OR TWITCHING OF THE LIPS

Convulsive raising of the upper lip is an occasional evidence of severe abdominal pain. Quivering of the lips occurs in emotional states when the individual is about to weep and cry.

General Paresis (*General Paralysis of the Insane; Dementia Paralytica*).—*Characteristics*.—In speaking there is marked tremulousness of the lips and facial muscles. The facies has a peculiar stolidity. The tongue is also tremulous, and may be protruded with difficulty.

Chief Signs.—See page 100.

Bulbar Paralysis.—*Characteristics*.—The lips are atrophied, and there is a fibrillary tremor of the muscle fibers. Saliva dribbles from the patient's trembling, paralyzed lips.

Chief Signs.—See page 43.

SKIN AFFECTIONS OF THE LIPS

(Including Ulcers)

Simple chapping of the lips is common in winter, and is frequently due to exposure to winds, and sometimes aggravated by the habit of picking.

Herpes Simplex (*"Cold Sore"*).—*Characteristics*.—The herpetic patch is most commonly observed on the cutaneous surface of the lower lip near the commissure. It consists of a collection of four to ten oblong, cloudy vesicles, irregularly placed side by side in one or two little groups, the whole collection being 2 to 3 mm. in diameter and having the shape of a half egg cut in its long axis. The vesicles appear and develop simultaneously on a common erythematous base which disappears about the third day. Crusts form and fall off in a week or ten days.

Chief Signs.—Slight sensitive adenitis at the beginning; may be slight fever.

Eczema.—*Characteristics*.—This affection of the lip is exceedingly common. The vermilion border is dry and rough, and prone to deep cracks or fissures. These are usually seen at the angles of the mouth or in the median line. When severe they are exceedingly painful, bleed freely, and are the cause of very great discomfort, especially in the cold season.

Chief Signs.—Occurrence in infants and children.

Epithelioma (*Prickle-celled Cancer*).—*Characteristics*.—The lower lip is the commonest place for this lesion to occur. It begins as a minute lump which rapidly grows larger and then ulcerates, a scab covering the patch. From time to time the scab either falls off or is removed, and the base of the ulcer is seen to be covered with granulationlike tissue which bleeds easily. The edge may be elevated and is always of a stony hardness. It may proliferate and assume a fungous growth.

Chief Signs.—Occurrence in middle life; history of chronic irritation or keratosis; early glandular involvement; biopsy.

Congenital Syphilis (*Hereditary Syphilis*).—*Characteristics*.—Fissures, or rhagades, radiating from the angles of the mouth or in the median line, are among the most diagnostic features of early hereditary syphilis. In the active stage these fissures are really linear ulcers of the lips; they are multiple, deep, painful, and bleed easily. They persist in spite of local treatment. After healing, contraction of the scars may produce the so-called "purse-string" deformity.

Chief Signs.—See page 230.

Mucous Patch (*Secondary Syphilis*).—*Characteristics*.—Mucous patches may be observed on the mucous surface of the lips as an extension from the mouth. They appear as excoriations, 3 to 4 mm. in diameter, of oval shape, with a slightly depressed red center and grayish borders.

Chief Signs.—May be concomitant roseolar or papular syphilids on the body, presence of other mucous patches in the mouth; positive Wassermann.

Chancre.—*Characteristics*.—The lesion may appear on any part of the lip and is almost always single. The developed lesion is round, slightly elevated, of almost cartilaginous consistency, involves the deeper structures, and has a flat, red, only slightly ulcerated surface, with no discharge.

Chief Signs.—Presence of “indicator” gland, either pre-auricular, submaxillary, or submental, according to location; other evidences of syphilis; demonstration of spirochetes; positive Wassermann.

Fordyce’s Disease.—*Characteristics.*—Small whitish or miliumlike bodies occur on the red border of the lips and the oral mucous membrane, which may be discrete or coalescent, profuse or scanty. Inside the mouth the bodies are whiter than those on the lips and more projecting.

Chief Signs.—May be slight burning and itching with a feeling of stiffness.

Perlèche.—*Characteristics.*—This affection usually starts at both angles of the lips as a whitening and maceration of the epithelium which is easily detached. It extends along the epithelium towards the middle line, involving also the surrounding skin and the mucosa of the inside of the lips.

Chief Signs.—Occurrence in children; accompanying hyperemia and inflammation; feeling of heat and discomfort, leading to constant licking (hence perlèche); frequent association with impetigo, or impetiginous stomatitis, or vesicular erythema.

Cancrum Oris (Noma; Gangrenous Stomatitis).—*Characteristics.*—The ulceration may extend outwards over the lips from the interior of the cheeks, or may perforate the lower lip. Extensive sloughing (septic gangrene) occurs.

Chief Signs.—See page 193.

Less Common Causes.—Cheilitis exfoliativa; cheilitis glandularis; lupus erythematosus; lichen planus; tinea circinata; urticaria; psoriasis; syphilitic condylomata; erythema multiforme; lupus vulgaris; rodent ulcer; eczema (upon the upper lip from nasal discharge, or from irritating tooth powder); foot-and-mouth disease; stomatitis; anthrax; tuberculous ulcer.

DEFORMITIES OF THE LIPS

Hare-Lip.—*Characteristics.*—This is a congenital cleft in the upper lip due to non-union of the frontonasal and superior maxillary processes. It may be single or double, incomplete or complete, and it may or may not be associated with cleft-palate. It is more frequent on the left side; median hare-lip rarely occurs. When double, the intermaxillary bones often fail to unite, and, with the central portion of the lip, project forward.

Chief Signs.—Occurrence from birth; males more commonly affected; may be hereditary.

Congenital Macrocheilia.—*Characteristics.*—The lip, usually the lower, may be hypertrophied from birth (lymphangiectasis).

Cicatrix (Scar).—*Characteristics.*—The healing of scars in the region of the lips, as from burns, wounds, noma, may cause considerable deformity.

Congenital Syphilis (Hereditary Syphilis).—*Characteristics.*—Contraction of the radiating lip ulcers which may occur early may cause the lips to be drawn up as by a purse-string (“purse-string” deformity).

Chief Signs.—See page 230.

Facioscapulohumeral Muscular Atrophy (Landouzy-Déjerine Type).—*Characteristics.*—The lips are everted and may remain apart, the lower lip protruding and giving the so-called “tapir mouth.” The lips cannot be pursed or

applied to a glass in drinking, and whistling is impossible. The nasolabial fold is lost, and in smiling, instead of the angles of the mouth being drawn upwards or outwards, the upper lip is elevated and the mouth forms a straight line.

Chief Signs.—See page 43.

Less Common Causes.—Oblique facial cleft; cleft of the lower lip; macrostoma (enlarged mouth); microstoma (small mouth).

THE MOUTH OR BUCCAL CAVITY

SYMPTOMS	PAGE
Pain in the Mouth (Sore Mouth)	182
Foul Breath (Fetor Oris; Halitosis)	183
Diagnostic Odors of the Breath	184
Salivation and Dribbling (Ptyalism)	185
Dryness of the Mouth	187
Foaming at the Mouth	188
Bleeding from the Mouth	188
The Open Mouth (Mouth-Breathing)	189
Mouth Drawn to One Side	190
Swellings in the Floor of the Mouth	190
Ulcers or White Patches in the Mouth	191
Koplik's Spots	194
Petechiæ in the Mouth	195
Pigment Patches in the Mouth	195
Colored Line on the Gums	196
Spongy, Bleeding, or Ulcerated Gums (Gingivitis)	197
Swellings of the Gums and Alveolar Processes	200
Swellings of the Cheek (Inside the Mouth)	203
Swellings of the Palate or Roof of the Mouth	204
Perforated Palate	205
Skin Affections of the Mouth (Including the Exanthematous Eruptions)	205

See also "The Tongue," page 207, "The Teeth," page 225, and "The Pharynx or Throat," page 237.

PAIN IN THE MOUTH*(Sore Mouth)*

(See also "Pain in the Throat," page 237, "Pain in the Tongue," page 208, and "Pain in the Teeth," page 225.)

Acute Catarrhal Stomatitis.—*Characteristics.*—There is considerable pain or discomfort, especially on eating hot or spiced foods. Infants, in whom the pain is most severe, are irritable and refuse the breast or bottle.

Chief Signs.—History of cutting teeth, mechanical, thermic, or chemical irritants, or presence of an infectious disease or digestive disorders; heat and redness of the gums and buccal mucous membrane (sometimes even the tongue); salivation; glandular enlargement; swollen, furred tongue, indented by the teeth; slight constitutional disturbance; short course.

Aphthous Stomatitis (*Herpetic, Vesicular, or Follicular Stomatitis; "Canker" Sores*).—*Characteristics.*—The pain is particularly intense, it being often difficult to induce children to take anything in the form of food.

Chief Signs.—Occurrence usually in children under three to six years, but also in adults; appearance of crops of vesicles with areolæ, which rupture and form shallow ulcers; coated tongue; "heavy" breath; malaise and slight fever; duration one to two weeks.

Ulcerative Stomatitis (*Fetid Stomatitis; Putrid Sore Mouth*).—*Characteristics.*—There is pain on mastication or on examination of the mouth.

Chief Signs.—Occurrence under unsanitary conditions, often in epidemic form; red, swollen, easily bleeding gums; ulcers along the gum-line of the upper and lower jaws; salivation; foul breath; enlarged submaxillary lymph glands; little or no fever; recovery in five to ten days.

Thrush (*Parasitic Stomatitis*).—*Characteristics.*—Food may be refused on account of pain, and there may be some difficulty in swallowing.

Chief Signs.—See page 192.

Gumma.—*Characteristics.*—Gummatous ulcers are sometimes extremely painful.

Chief Signs.—See page 193.

Corrosive Poisoning.—*Characteristics.*—There is always severe pain in the mouth, throat, esophagus and stomach after swallowing corrosive poisons. If the patient recovers and ulcers form in the mouth as a result of sloughing, these also will be painful.

Chief Signs.—See page 193.

Secondary Syphilis.—*Characteristics.*—The mucous patches sometimes occasion but little complaint of pain on the part of the patient, at other times they may be very annoying and painful.

Chief Signs.—See page 192.

Erosion from Mouth-Washes.—*Characteristics.*—The mucous membrane may become extremely sensitive from erosions produced by highly concentrated mouth-washes. There are red erosions, sometimes with white scabs, found mostly at the margin of the tongue and epiglottis, palatal arches and uvula.

Burns of the Mouth.—*Characteristics.*—Following the ingestion of very hot liquids or solids, or the inhalation of steam, severe scalding may result, always

accompanied by pain of so severe a character sometimes as to completely prevent all movements of the mouth and tongue. High degrees of heat produce blisters which soon burst, and also thin fibrinous deposits, swelling and reddening of the mucous membrane.

Scurvy (*Scorbutus*).—*Characteristics*.—The gums become painful, and mastication may be impossible from swelling and ulceration of the gums.

Chief Signs.—See page 199.

Pellagra.—*Characteristics*.—After a variable time a sensation of burning in the mouth, with or without some redness, may appear. The redness at first most commonly affects the tip, or the tip and margins of the tongue; less frequently the buccal mucosa becomes more or less evenly reddened. In marked cases the epithelial surface of the tongue may be denuded and the tongue and buccal mucosa appear diffusely red, or present flaming red patches over which the epithelial layer may appear as a gray, somewhat slimy, fairly easily detached pseudomembrane. The burning may involve the pharynx, and occasionally extends along the esophagus; more rarely the patient may complain of a sensation of burning from mouth to anus as if the entire tract were raw.

Chief Signs.—See page 339.

Less Common Causes.—Ulcerative stomatitis of nursing women; chronic gingivitis; acute diffuse glossitis; Ludwig's angina; cancrum oris; carcinoma; sialadenitis: mercurialism; pernicious anemia; tuberculosis (local).

FOUL BREATH

(*Fetor Oris; Halitosis*)

(See also "Diagnostic Odors of the Breath," page 184.)

Pyorrhea Alveolaris (*Riggs' Disease*).—*Characteristics*.—This is the most common cause of foul breath in adults and is almost constantly present after middle life, causing a perfectly distinctive odor. An easy test is to draw a bit of stout thread high up between the teeth and the gums and then smell it.

Chief Signs.—See page 199.

Chronic Follicular Tonsillitis.—*Characteristics*.—The fetor oris is often marked, due to the putrefactive processes occurring in the crypts of the tonsils. The odor of the expressed bodies resembles that of Limburger cheese.

Chief Signs.—See page 243.

Adenoids.—*Characteristics*.—The breath is often fetid from the decomposition of the retained secretions and from the disordered stomach which is so often complained of.

Chief Signs.—See page 160.

Caries of the Teeth.—*Characteristics*.—The breath is foul if there are badly decayed teeth in the mouth, and is quite different from that of either pyorrhea or tonsillitis. This odor is common in those to whom the use of the toothbrush is unknown.

Chief Signs.—See page 30.

Atrophic Rhinitis (*Ozena*).—*Characteristics*.—There is a "stench" which emanates from the nose and mouth, the fetid odor being associated with an in-

spissated secretion, which forms greenish crusts over the whole of the nasal mucous membrane.

Chief Signs.—See page 174.

Stomatitis.—*Characteristics.*—All forms are associated with a foul breath. Smokers often suffer from a mild chronic stomatitis, and their breath in the morning is “heavy.”

For forms of Stomatitis, see page 191.

Dyspepsia.—*Characteristics.*—The breath is often “heavy” and disagreeable. The gastritis of chronic alcoholism is a common cause. In children the odor is merely a sour smell. The dyspepsia of constipation is an occasional cause.

For causes of Dyspepsia, see page 487.

Less Common Causes.—Bronchiectasis; putrid bronchitis; gangrene of the lung; abscess of the lung; pyopneumothorax (with bronchial fistula); empyema (with bronchial fistulas); pulmonary actinomycosis; bronchorrhea; measles; small-pox; scarlet fever; diphtheria; typhus fever; glossitis; scurvy; necrosis of the jaw; bromism; iodism; lead poisoning; intestinal obstruction (often stercoral); peritonitis; carcinoma of the mouth; carcinoma of the esophagus; gangrenous sore throat; otitis media; nasal obstruction; foreign body in the nose, pharynx, or larynx; carcinoma of the stomach; dilatation of the stomach; fecal impaction; subphrenic or hepatic abscess (opening into the lung); cancrum oris; tuberculous cavity; Vincent’s angina.

DIAGNOSTIC ODORS OF THE BREATH

(See also “Foul Breath,” page 183.)

If sordes have collected upon the teeth the breath is apt to be stale and musty. A hot, “feverish” breath is common in febrile disorders, and the disagreeable odor is most noticeable in measles, scarlet fever, and typhus fever. A slight cadaveric smell is at times perceptible in the breath of those who are critically ill. The characteristic odors of ether and chlorform are easily detectable from those who have been under the influence of these anesthetics. Opium preparations are said to give a narcotic odor when used in sufficient strength to cause profound stupor.

Acute Alcoholism.—*Characteristics.*—The odor of alcohol is strong upon the breath of tipplers. The fact that such an odor is present should not, however, condemn a comatose individual to neglect, especially one who has been in an accident or has been picked up from the gutter.

Chief Signs.—See page 37.

Uremia.—*Characteristics.*—An ammoniacal, “urinous” odor is often present on the breath in severe grades of uremia.

Chief Signs.—See page 8.

Diabetes Mellitus.—*Characteristics.*—A heavy sweetish odor, like stale beer or overripe apples, and due to the presence of acetone or diacetic acid, is typical of the acidosis of diabetes, often preceding or accompanying the coma.

Chief Signs.—See page 344.

Phosphorus Poisoning.—*Characteristics.*—An alliaceous or garlicky odor is present on the breath of an individual recently poisoned.

Chief Signs.—See page 736.

Hydrocyanic Acid Poisoning (*Prussic Acid Poisoning*).—*Characteristics.*—The breath may smell of peach kernels or bitter almonds, provided that too long a time has not elapsed since the poisoning.

Chief Signs.—History of ingestion; numbness in the mouth and throat; nausea and vomiting; confusion and headache; dyspnea; slow pulse; general muscular weakness; dilated pupils; unconsciousness; convulsions; incontinence of urine and feces; respiratory failure.

Mercurial Stomatitis.—*Characteristics.*—There is a characteristic fetor ex ore, which is of a peculiar and metallic quality.

Chief Signs.—See below.

Less Common Causes.—Thrush (sweetish, acid odor); arsenic poisoning (alliacious odor); bismuth poisoning (alliacious odor); lactation (sweetish odor); septicopyemia (sweetish odor); bronchiectasis (odor of sulphuretted hydrogen).

SALIVATION AND DRIBBLING

(*Ptyalism*)

The amount of saliva which is excreted in twenty-four hours is normally from two to three pints. Hypersecretion may occur in early pregnancy and sometimes during menstruation. The process of dentition may be attended with an excessive formation of saliva. The mouth “waters” normally at the sight or smell of savory food, sometimes in contemplation of a feast. Salivation is occasionally observed in early pregnancy. Joy, fright, worry, and anxiety are sometimes the cause; the condition has been known to occur during sexual excitement or during the orgasm. Tobacco, spices, alcohol, and bitter substances in general produce an increased flow. Pseudoptyalism occurs in all comatose conditions (anesthesia); this is an inability to swallow the normal amount of salivary secretion, resulting in an accumulation of saliva in the mouth, which drools down the side of the cheeks.

Stomatitis.—*Characteristics.*—Saliva is greatly increased in quantity and may dribble from the mouth. It may be bloody.

For forms of Stomatitis, see page 191.

Mercurialism (*Mercury Poisoning or Susceptibility*).—*Characteristics.*—Salivation is a constant symptom and accompanies the stomatitis. The lips and skin are irritated where exposed to the secretion. The salivary glands become enlarged and painful.

Chief Signs.—History of prolonged medicinal use of the drug in any form; metallic taste; feeling of numbness and soreness of the tongue and gums; fetid breath; swollen, coated tongue; swollen, dark bluish-red or gray-colored gums, possibly ulcerated; may be loosening or falling out of the teeth; colic and diarrhea, or alternating diarrhea and constipation; may be skin eruption; may be albuminuria; tremor and other nervous system phenomena; pallor, emaciation, weakness.

Peritonsillar Abscess (*Quinsy*).—*Characteristics.*—Dribbling of saliva from the mouth forms one of the characteristic symptoms. A thick viscid secretion also forms in the throat, which the patient finds difficulty in expelling.

Chief Signs.—See page 238.

Vincent's Angina.—*Characteristics.*—Salivation is a common symptom and may be profuse.

Chief Signs.—See page 199.

Dementia.—*Characteristics.*—Saliva may drool from the mouth. Salivation is sometimes an early and prominent feature in the psychoses, as in general paresis and melancholia.

For causes of Dementia, see page 696.

Neurosis (“*Hysteria*”; “*Neurasthenia*”).—*Characteristics.*—Reflex salivation occurs following painful affections of the mouth. It is a common symptom in “hysteria.”

Chief Signs.—See page 40.

Idiocy.—*Characteristics.*—The mouth remains open and saliva drools therefrom.

Chief Signs.—See page 21.

Neurosis of the Mouth.—*Characteristics.*—A functional form of salivation occurs as a mouth neurosis, attended with discomfort in the salivary glands. There is generally a history of a constant discharge of saliva, and the patients produce for inspection a bottle of saliva which they say is the discharge which constantly forms in the mouth. Under ordinary circumstances the increased secretion does not take place at night.

Chief Signs.—Absence of constitutional or local disease, except perhaps patches of chronic inflammation about the jaws; tenderness over the related skin area on the cutaneous surface of the face.

Fracture of the Lower Jaw.—*Characteristics.*—The saliva dribbles constantly and is apt to be mixed with blood from laceration of the gum.

Chief Signs.—See page 231.

Dislocation of the Jaw.—*Characteristics.*—The saliva dribbles, swallowing being difficult and closure of the mouth impossible.

Chief Signs.—See page 189.

Trigeminal Neuralgia (*Tic Douloureux*).—*Characteristics.*—Perhaps the most constant of all symptoms attending the paroxysm of pain is that of salivation, especially when the pain is referred to the lips and angles of the mouth. The mouth drops apart and saliva runs from the open mouth.

Chief Signs.—See page 31.

Facial Paralysis.—*Characteristics.*—On the affected side the angle of the mouth droops and saliva dribbles from it. If the lesion be within the fallopian aqueduct there may be an excess secretion of submaxillary and sublingual saliva.

For causes of Facial Paralysis, see page 47.

Bulbar Paralysis.—*Characteristics.*—The saliva may be increased and is apt to accumulate in the mouth.

Chief Signs.—See page 43.

Less Common Causes.—Adenoids; alveolar abscess; Ludwig's angina; mumps; salivary calculus; arteriosclerosis; carcinoma of the larynx; carcinoma of the stomach; cancerum oris; irritation of the chordi tympani; dental abscess; dilatation of the stomach; diphtheritic paralysis; epulis; foreign body in the mouth; glossitis; hemophilia; hydrophobia; hyperchlorhydria; hypoglossal paralysis; myasthenia gravis; myeloid sarcoma; necrosis of the jaw; pancreatic disease; paralysis agitans;

pellagra; pernicious anemia; pseudobulbar paralysis; pyorrhea alveolaris; ranula; scurvy; sprue; syphilis; jagged teeth; ulcer of the mouth; gastric ulcer; duodenal ulcer; smallpox; typhus fever; worms; overaction of aconite, antimony, arsenic, bromids, cantharides, potassium chlorate, copper, iodine, phosphorus, pilocarpin; sialodochitis; bismuth poisoning; tabes dorsalis (crises); esophageal paralysis, diverticulum, and stenosis.

DRYNESS OF THE MOUTH

The mouth is dry in most febrile affections. Fright, anger, or excitement may temporarily inhibit the secretion of saliva.

Nasal Obstruction.—*Characteristics.*—One of the unpleasant symptoms of mouth-breathing is the stiff, dry tongue of the morning awakening. There is no actual diminution of the salivary secretion.

For causes of Obstruction of the Nose, see page 161.

Diabetes Mellitus.—*Characteristics.*—The mouth and tongue are usually dry and the saliva scanty. Increased thirst is one of the cardinal symptoms of this disease.

Chief Signs.—See page 344.

Chronic Interstitial Nephritis.—*Characteristics.*—The mouth is often dry, due to dehydration from polyuria.

Chief Signs.—See page 754.

Chronic Gastritis.—*Characteristics.*—While dryness of the mouth is often a persistent feature, a catarrhal stomatitis may complicate the disorder and produce the reverse condition.

Chief Signs.—See page 495.

Mumps (Epidemic Parotitis).—*Characteristics.*—The salivary secretion is usually very much diminished, and the dry mouth causes great discomfort. Exceptionally, distressing salivation occurs.

Chief Signs.—See page 54.

Thrush (Sprue; Parasitic Stomatitis).—*Characteristics.*—The mouth is generally dry.

Chief Signs.—See page 192.

Atropin or Belladonna Action.—*Characteristics.*—One of the outstanding effects of atropin therapy or poisoning is the inhibition of most of the secretory processes of the body, including particularly the flow of saliva. The effect is the characteristic dryness of the mouth, the hoarseness of the voice, and the thirst and difficulty in swallowing.

Chief Signs.—History of administration; nervous excitation, followed by depression; diminished gastric juice, sweat, tears; dilatation of the pupils; sedation of gastric and intestinal peristalsis; increase in the heart rate; may be pyrexia.

Diabetes Insipidus.—*Characteristics.*—The amount of saliva is small and the mouth usually dry. Excessive water drinking is an outstanding symptom.

Chief Signs.—See page 828.

Xerostomia.—*Characteristics.*—In this condition the secretions of the salivary glands and mouth are suppressed. The tongue is red, sometimes cracked, and quite dry; the mucous membrane of the cheeks and of the palate is smooth, shining,

and dry; and mastication, deglutition, and articulation are very difficult because of the dryness.

Chief Signs.—Occurrence usually in women.

Less Common Causes.—Facial paralysis; cholera; botulism; hypertension; neurosis; intestinal stasis; menopause; myxedema; sialadenitis; salivary calculus; senile atrophy of the salivary glands.

FOAMING AT THE MOUTH

Epilepsy.—*Characteristics.*—Foaming at the mouth occurs during the clonic stage of the convulsive attack. The foam consists of a frothy saliva, which may be blood-stained.

Chief Signs.—See page 46.

Cerebral Hemorrhage (*Apoplexy*).—*Characteristics.*—Saliva may be blown out in bubbles during expiration by the spluttering lips.

Chief Signs.—See page 91.

Pulmonary Edema.—*Characteristics.*—A copious, frothy, and perhaps blood-tinged foam escapes from the mouth in a patient who is prostrated and unable to expectorate forcibly.

Chief Signs.—See page 358.

Less Common Causes.—“Hystero-epilepsy”; malingering.

BLEEDING FROM THE MOUTH

Blood expelled from the mouth may come from a number of sources. In epistaxis blood may escape backwards into the nasopharynx and be either spit out or swallowed and vomited (see “Epistaxis,” page 167). In hematemesis the blood originates from the digestive tract and escapes through the mouth (see “Hematemesis,” page 498). Hemoptysis may simulate bleeding of buccal origin (see “Hemoptysis,” page 363).

Gingivitis.—*Characteristics.*—In many of the acute forms of gum inflammation the gums are spongy and bleeding, and bloody saliva and mucus are expectorated. For causes of Gingivitis, see page 197.

Tooth Extraction.—*Characteristics.*—Occasionally the tooth socket and gum continues to bleed for hours or days, even though the clotting time of the blood is normal. The patient may become exsanguinated by this steady loss of blood.

Trauma.—*Characteristics.*—Any injury to the tongue, as by a jagged tooth or accidentally bitten tongue, to the gums or the mucous membrane of the buccal cavity and pharynx is an obvious cause of bleeding from the mouth. In fracture of the jaw the gum may be lacerated.

Ulcers in the Mouth or Throat.—*Characteristics.*—These may cause a sanious discharge (epithelioma), or the saliva expectorated may be blood-stained.

For causes of Ulcers, see “Ulcers in the Mouth,” page 191; “Ulcer of the Tongue,” page 217, and “Ulceration of the Tonsils,” page 245.

Epilepsy.—*Characteristics.*—During the clonic stage of the convulsion the movements of the jaw are very forcible and strong, and it is at this time that the tongue is apt to be caught between the teeth and lacerated. A frothy, bloody saliva

then escapes from the mouth. The attack may occur at night and the patient expectorate blood from his mouth, entirely unaware of the cause of his sore tongue.

Chief Signs.—See page 46.

Less Common Causes.—Adenoids; varicose veins of the pharynx; noma; hemophilia; splenic anemia; hypertrophy of the lingual tonsil.

THE OPEN MOUTH

(*Mouth-Breathing*)

In states of prostration the mouth may be open from general muscular asthenia.

Nasal Obstruction.—*Characteristics.*—Mouth-breathing is an outstanding symptom in many cases. In adenoids there is mouth-breathing constantly or only during sleep; the open mouth and the stupid, listless facial expression are typical of large adenoid growths.

For causes of Obstruction of the Nose, see page 161.

Dyspnea.—*Characteristics.*—In severe grades and acute attacks the mouth opens with each inspiration. The difficulty is obviously with breathing and, therefore, the diagnosis of the cause of the dyspnea is the main consideration. Orthopnea causes the jaw to drop by gravitation.

For causes of Dyspnea, see page 391.

Idiocy.—*Characteristics.*—The idiot may betray his lack of mental capacity by his vacant, stupid expression, his open mouth, protruding tongue, drooling, and his irregular aimless movements of the hands.

Chief Signs.—See page 21.

Cretinism.—*Characteristics.*—The cretin's thick lips are separated and his tongue slightly protruded between them.

Chief Signs.—See page 51.

Dislocation of the Jaw.—*Characteristics.*—In the bilateral form the mouth is open and fixed, and it cannot be closed, though it can be opened a little more. The lower jaw is advanced in front of the upper jaw and the face looks longer than normal. The condyles are in front of the articular eminences and are fixed by the action of the masseters and internal pterygoids; there is a depression in front of each ear. The lips cannot close, saliva dribbles from the mouth, and swallowing and speech are difficult.

Chief Signs.—Sudden occurrence after yawning, vomiting, laughing, etc., after a blow upon the chin when the mouth is open, or after forcing the mouth open beyond its normal range; may or may not be pain.

Retropharyngeal Abscess.—*Characteristics.*—The most characteristic local symptoms are the posture, the head being drawn far backward to relieve pressure on the larynx, the noisy respiration with the mouth open, difficulty in deglutition, and some external swelling.

Chief Signs.—See page 247.

Facioscapulohumeral Muscular Paralysis (*Landouzy-Déjerine Type*).—*Characteristics.*—The lips are everted and may remain apart, the lower lip protruding and giving the so-called "tapir mouth."

Chief Signs.—See page 43.

Progressive Lenticular Degeneration (*Wilson's Disease*).—*Characteristics.*—

At times the contractures of the facial muscles of expression lead to an abduction of the corners of the mouth and a separation of the lips, giving the patient a silly, idiotic appearance. The face assumes a fixed and immobile expression.

Chief Signs.—See page 44.

Less Common Causes.—Peritonsillar abscess; tonsillitis; general paresis; bulbar paralysis; idiopathic muscular atrophy; cancrum oris; stomatitis; glossitis; the open bite.

MOUTH DRAWN TO ONE SIDE

Facial Paralysis.—*Characteristics.*—On the affected side the angle of the mouth is lowered and the lips drawn to the sound side. In smiling or laughing the contrast is most striking, as the affected side does not move, which gives a curious unequal appearance to the two sides of the face. On asking the patient to show his teeth, the angle of the mouth on the affected side is not raised.

For causes of Facial Paralysis, see page 47.

Facial Hemiatrophy.—*Characteristics.*—The face looks as if it were made up of two halves of different persons. One side of the mouth is larger and gives the appearance of being drawn toward that side.

Chief Signs.—See page 52.

Less Common Causes.—Scars; facial hemihypertrophy; unilateral dislocation of the jaw.

SWELLINGS IN THE FLOOR OF THE MOUTH

(See also "Swelling of the Gums and Alveolar Processes," page 200, and "Swellings of the Tongue," page 215.)

Ranula.—*Characteristics.*—There is a chronic slow-growing swelling in the anterior part of the floor of the mouth, situated immediately beneath the mucous membrane, which may be median, or more on one side than on the other. It is of a bluish-gray color, or it may be reddish-gray from the number of small vessels that cover it. It is often covered by veins. It is tense and fluctuates, but does not pit on pressure. It raises the tongue upward, and when large, may cause considerable inconvenience and discomfort. It rarely causes a prominence below the chin. If developing in childhood, it may cause considerable protrusion and deformity of the lower jaw and displacement of the teeth. The cyst contains at first saliva, later a mucoid substance.

Salivolithiasis (Salivary Concretion).—*Characteristics.*—When occurring in the sublingual gland or duct there is a hard mass which may be of any size up to that of a hen's egg (though usually small), located beneath the tongue 1 or 2 cm. behind the sublingual caruncle. The concretion is elongated, pear-shaped, or less often round.

Chief Signs.—Swelling and tenderness of the gland during meals, and in old cases a permanent thickening of the glandular tissues.

Dermoid Cyst.—*Characteristics.*—In the floor of the mouth, dermoids occur in one of two situations; in the midline beneath the skin or between the geniohyoglossi muscles; or laterally below the angle of the jaw. When small they usually protrude downward below the chin, but may bulge upward into the mouth, in

which case they appear as a yellowish mass beneath the mucous membrane. When very large, a dermoid may press the tongue upward and backward, and even cause dyspnea. On bimanual palpation dermoids yield a doughy sensation and pit on pressure. They are of slow growth, requiring some years to attain any considerable size. They may contain hair or other skin appendages.

Carcinoma.—*Characteristics.*—This tumor may arise close to the tongue, being possibly primary in the sublingual gland, or it may be an extension from the tongue. Carcinoma may occur in the outer part of the floor as an extension from the lip or jaw. An indurated area or hard knot first appears, which ulcerates, tending to spread rapidly and fungate, and owing to the growth of the cells the edges of the ulcer become everted, and a curious cauliflower nodular appearance of the surface is seen, covered by a seropurulent, fetid slough. The tongue is soon involved and becomes fixed, articulation and deglutition becoming difficult.

Chief Signs.—Occurrence after forty; involvement of the submaxillary lymph glands; pain; early cachexia; biopsy.

Ludwig's Angina.—*Characteristics.*—This uncommon and morbid infection of the cellular planes gives rise to an acute spreading infiltration of the soft tissues, starting in the floor of the mouth and submaxillary region, and binds all the structures into a hard, boardlike mass. The swelling is attached to the jawbone on one or both sides and presses the tongue upward and backward into the pharynx. Within the mouth the induration may be felt in the floor on one or both sides, and the submucosa may be so edematous as to rise above the level of the teeth in a gray roll. The trouble often starts in a subacute swelling which may remain indolent for some days or weeks, but when it becomes active the swelling spreads rapidly until the whole floor of the mouth and front of the neck may be involved.

Chief Signs.—May be history of operation, injury, or carious teeth; may be respiratory difficulty; head carried stiffly with chin raised; may be pallor and pronounced cyanosis; difficulty in opening the mouth; grave sepsis unless resolution takes place.

Secondary Sialadenitis.—*Characteristics.*—The submaxillary or sublingual glands are indurated and slightly painful, but the swelling usually subsides promptly without causing an abscess. The enlargement is visible in the floor of the mouth or under the chin or rami of the jaws.

Chief Signs.—History of infection or salivary stones; may be hyperemia and sensitiveness of the overlying skin; may be slight pain on deglutition both in the throat and in the region of the gland; may be recurrences.

Less Common Causes.—Cyst of Wharton's duct; cyst of the incisive gland; nevus; mucous cyst (of the glands of Nuhn and Blandin); Mikulicz's disease; angioma; lipoma; sarcoma; chronic cellulitis (Holzphlegmon); acute cellulitis; phlegmonous cellulitis; branchial cyst; actinomycosis; gaseous cyst; papilloma; thyroglossal cyst; hydatid cyst; traumatic tumor of the frenum (in nurslings).

ULCERS OR WHITE PATCHES IN THE MOUTH

Acute Catarrhal Stomatitis.—*Characteristics.*—The affection may be limited to the gums and lips or may extend over the whole surface of the mouth and include the tongue. There are, first, superficial redness and dryness of the membrane,

followed by increased secretion and swelling of the tongue, which is furred, and indented by the teeth. The labiogingival region is usually the seat of the most active inflammatory manifestations. Minute areas of the epithelial covering often become transformed into small, shallow, pultaceous, and quite painful ulcers.

Chief Signs.—Presence of erupting teeth, history of mechanical, chemical, or thermic irritants, or presence of an infectious disease; pain or discomfort in the mouth; slight constitutional disturbance; short course.

Aphthous Stomatitis (*Herpetic, Vesicular, or Follicular Stomatitis; "Canker" Sores*).—*Characteristics.*—In this variety there appear, besides the more or less marked inflammation of the oral mucosa, small, elevated, round or oval vesicles, 2 to 5 mm. in diameter, which, in a few hours, rupture and form small ulcers with grayish bases and bright-red margins. They are seen most frequently on the inner surfaces of the lips, the edges of the tongue, and the cheeks. The aphthæ may become confluent and give rise to large, irregular ulcers (confluent form). In severe cases it may extend to the pillars of the fauces and to the pharynx. The vesicles come in successive crops. There may be only one or half a dozen present, or the mouth may be filled with them.

Chief Signs.—Occurrence usually in children under three to six years, often with gastro-intestinal disorders, but also in adults; pain; coated tongue; "heavy" breath; general indisposition, loss of appetite, slight fever; duration, one to two weeks.

Ulcerative Stomatitis (*Fetid Stomatitis; Putrid Sore Mouth*).—*Characteristics.*—The morbid process begins at the margin of the gums, which become swollen, red, and bleed easily. Ulcers form, the bases of which are covered with a grayish-white, firmly adherent membrane. The ulcers extend along the gum-line of the upper and lower jaws; the tongue, lips, and mucosa of the cheeks are swollen, but rarely ulcerated.

Chief Signs.—Occurrence under unsanitary conditions, often in epidemic form; painful mastication; foul breath; salivation; enlarged submaxillary lymph glands; little or no constitutional symptoms; recovery usually in five to ten days.

Thrush (*Parasitic Stomatitis; Mycotic Stomatitis; Muguet; Soor*).—*Characteristics.*—This form of stomatitis usually begins upon the tongue and, spreading in every direction, may gradually involve the lips, the cheeks, the palate, the gums, the tonsils, the pharynx, the larynx, and even the gastro-intestinal tract down to the ileocecal valve. The lesions are slightly raised, pearly-white spots, which increase in size and gradually coalesce. The membrane thus formed can be readily scraped off, leaving an intact mucosa, or, if the process extends deeply, a bleeding, slightly ulcerated surface.

Chief Signs.—Occurrence usually in enfeebled, emaciated infants with digestive or intestinal troubles; dry mouth and coated tongue; usually no constitutional symptoms (unless complicating a wasting or infectious disease); presence of the fungus *Oidium albicans*.

Secondary Syphilis.—*Characteristics.*—The mucous patch is a rather common intra-oral secondary lesion. They occur on the edge of the tongue, on the under surfaces near the tip and on the dorsum, on the uvula and palate arches, sometimes on the tonsil or posterior pharyngeal wall, but most commonly of all on the inner surfaces of the lips, where one can often see the papules on the outer surface

passing into mucous patches. They appear as large or small, round or irregular plaques of a grayish-white color covered by a sticky secretion. The mucous membrane around the plaques is not conspicuously red, unless irritated. They may disappear quickly, especially under constitutional treatment, but they may recur or be remarkably persistent. Years after healing, round, pearly-white smooth patches may be present.

Chief Signs.—Onset within four to twelve weeks after exposure or five to six weeks after the primary lesion; rashes on the skin; sore throat; general enlargement of the lymphatic glands; may be alopecia; anemia; may be fever and headache; may be osteoscopic pains, mainly at night; positive Wassermann.

Corrosive Poisoning.—*Characteristics.*—All corrosive poisons when taken into the mouth cause severe irritation, inflammation, erosion, ulceration, or even necrosis and sloughing. The mucous membrane will be discolored, whitish by carbolic acid, grayish by lye, yellowish by nitric acid, brownish or blackish by sulphuric or hydrochloric acids. Protruding scabs may form, which, on coming away, leave painful, grayish-yellow ulcers, the borders of which are more or less reddened and swollen. The parts most prominently affected are the labial margins, tongue, and soft palate. If extensive areas are involved, there will be inflammatory edema, possibly involving the glottis and interfering with respiration.

Chief Signs.—History of ingestion of a corrosive poison (as lye, ammonia, nitric, sulphuric, or hydrochloric acid, phenol, lysol); violent inflammation of the throat, esophagus, and stomach; prostration, collapse, and death if the substance cannot be immediately neutralized or removed.

Mercurialism (*Chronic Mercury Poisoning or Susceptibility*).—*Characteristics.*—If the absorption of mercury is continued, after the first symptoms of stomatitis appear, ulcers arise on the gums and on the sides of the tongue where it comes in contact with the teeth, especially if these are carious, and on the mucous membrane of the cheeks. Gangrene of the mouth may occur in severe types of ulcerations with loss of the teeth and even parts of the jaw.

Chief Signs.—See page 185.

Gangrenous Stomatitis (*Cancrum Oris; Noma*).—*Characteristics.*—It begins as a small, dense, sensitive nodule, appearing on the gum or cheek, followed by swelling and edema. There may be pain, but as a rule, little discomfort. Mild cases may heal with moderate disfiguration, but in the majority, the necrotic process rapidly extends, the cheek is perforated, and even remote structures are destroyed.

Chief Signs.—Occurrence during convalescence from acute febrile processes in debilitated children; fever and diarrhea; intensely foul breath; enlarged submaxillary and cervical glands; edema of the feet and delirium; prostration; usually rapid fatality, in one to two weeks.

Gumma (*Tertiary Syphilis*).—*Characteristics.*—Gummata may occur in any part of the mouth, but are most common on the upper surface of the velum, the tonsil, the posterior pharyngeal wall, the palate, and the tongue. They may be single or multiple, the size of a pea or a hazelnut. They are sometimes diffuse, giving the tissues a leathery feel, but are more often circumscribed, being felt as distinct nodules. When a gumma breaks down, it forms an ulcer with sharp edges. If the whole gumma disintegrates, the edge of the ulcer will be formed by healthy tissue, but more often it shows induration. If a gumma is deeply situated, there

will result an ulcer with deeply undermined edges, or it may communicate with the surface by a small opening. A serpiginous or scalloped border is a very common characteristic. An ulcer that heals at one edge as it spreads at another is usually due to gumma, but may be due to tubercle. On the hard palate the ulcer often extends through to the nasal cavity. Gummatous ulcers are sometimes extremely painful. In healing, large ulcers often cause considerable distortion.

Chief Signs.—Onset from two to ten years after infection, occasionally much earlier or later; history of primary and secondary manifestations; presence of visceral or amyloid disease; positive Wassermann; therapeutic test.

Smallpox (*Variola*).—*Characteristics.*—The eruption may appear in the mouth, especially on the palate, at the same time as it appears on the skin. Though it is of the same character, the umbilicated vesicles soon rupture and leave in their place shallow ulcers. There is soreness and swelling of the parts.

Chief Signs.—See page 770.

Chickenpox (*Varicella*).—*Characteristics.*—The eruption may occur on the mucous membrane of the mouth. The appearance is first as a tiny vesicle, and later as a superficial ulcer resembling that of herpetic stomatitis. The occurrence in the mouth is much less common than in smallpox.

Chief Signs.—See page 775.

Vincent's Angina.—*Characteristics.*—In addition to the membranous patches found upon the fauces and soft palate, small patches of Vincent's angina may be found upon the buccal mucous membrane of the gums and cheeks. A small necrotic patch is formed, from which it is almost impossible to remove the membrane, which is exceedingly painful, and the infection along the margins of the gums and in the throat is due to a superficial tissue necrosis.

Chief Signs.—See page 199.

Tuberculosis.—*Characteristics.*—The infection may occur in any part of the mouth, but it is peculiar that tuberculosis of the maxilla and roof of the mouth is not nearly so virulent as, and runs a much milder course than, tuberculosis of the tongue, floor of the mouth, or mandible. At first there are always one or more tubercles, but these may ulcerate so rapidly as to escape notice. When completely formed, it usually shows an uneven, pale, flabby surface of rather watery granulations, or covered with a grayish-yellow secretion. The edges are usually sharp-cut or beveled, rarely elevated, everted, or undermined. They are painful and may be extremely so.

Chief Signs.—Late involvement of the lymph glands; presence of tuberculosis elsewhere; biopsy (may not be giant cells, but may be tubercle bacilli).

Less Common Causes.—Herpes zoster; Bednar's aphthæ; Parrot's disease; Riga's disease; gonorrhea; diphtheria; carcinoma; foot-and-mouth disease; ulcerative stomatitis of nursing women; leprosy; anthrax; bites; action of antipyrin, aspirin, phenacetin, quinin; chancre; acute leukemia; sarcina; glanders; bismuth poisoning; pellagra; vaccinia; typhoid fever, paratyphoid fever; influenza.

KOPLIK'S SPOTS

Measles (*Morbilli; Rubeola*).—*Characteristics.*—A sign of the greatest diagnostic value is the buccal eruption. The unit of the eruption is a bluish-white

speck upon a red ground; only a few of these are present for the first twenty-four or thirty-six hours; after this the mucous membrane may be fairly peppered with them. Often they are not seen except by careful search, for which strong sunlight is necessary. The spots are best seen on the inside of the cheeks opposite the molar teeth, and in most cases only there; but they may be present on almost any part of the buccal mucous membrane. Their diagnostic value is due to the fact that they are nearly always present, that they are not found in other diseases, and that they usually appear two or three days before the skin eruption. This generally disappears at the time of the full eruption.

Chief Signs.—May be history of exposure seven to twenty-one days previous; occurrence most extensively in December and June, most often in children; acute onset with coryza, redness of the conjunctiva, lachrimation, and photophobia; cough; laryngitis; initial fever of about 102° F., falling on the second day to 100° F., and rising at the onset of the rash to 104° or 105° F., and then falling to normal about the seventh day from the onset; prodromal erythematous rash on the trunk, followed by the true eruption, a blotchy, irregular, dusky red, papular rash, often arranged in crescents, and beginning on the temples, spreading to the face, trunk and limbs; duration of the rash three to four days, followed by branny desquamation; may be complications (bronchopneumonia, stomatitis and noma, otitis media, diarrhea, convulsions); may be sequelæ (pulmonary tuberculosis, chronic bronchitis, enlarged tonsils and adenoids); leukopenia.

PETECHIÆ IN THE MOUTH

Scurvy (*Scorbutus*).—*Characteristics.*—Hemorrhages beneath the mucous membranes of the mouth are common.

Chief Signs.—See page 199.

Purpura Hæmorrhagica.—*Characteristics.*—Ecchymoses upon the visible mucous membranes, including the mouth, occur, resembling those seen under the skin; and hemorrhages from the mucous membranes, including the mouth, are frequent in severe types of the disease.

Chief Signs.—See page 791.

Less Common Causes.—Hemophilia; pernicious anemia; splenic anemia; measles; trauma; ulcerative endocarditis.

PIGMENT PATCHES IN THE MOUTH

(See also "Colored Line on the Gums," page 196.)

Addison's Disease.—*Characteristics.*—Considerable diagnostic importance is placed upon the presence of pigment patches in the mouth similar to those of the skin. Frequently the mucous membranes become pigmented before the skin. Discoloration of the inner surfaces of the cheeks and labial commissures (and the genital mucosæ) is especially typical.

Chief Signs.—Occurrence usually between twenty and forty years; insidious onset; extreme and progressive asthenia; pigmentation of the skin, light brown to deep brown or almost black, especially on exposed parts, parts normally pigmented, and

parts exposed to irritation; low blood-pressure; cardiac weakness; anorexia; attacks of vomiting; constipation early, later may be diarrhea; Sargent's white line; progressive course.

Argyria.—*Characteristics.*—The permanent, bluish-gray or slate-colored discoloration of the skin extends on to the adjoining mucous membranes. It first appears as a dark-blue line on the edges of the gums.

Chief Signs.—History of prolonged administration of silver nitrate; permanent general discoloration, most marked on the face and hands, and including the nails and hair.

Acanthosis Nigricans.—*Characteristics.*—The mouth is one of the favorite situations of the pigmentation and papillary hypertrophy, the others being the face, lips, neck, axillæ, genitocrural, anal, and abdominal regions. The color varies from a sallow yellow to a bronzed or dirty brown. The lesions on the mucous membrane, especially in the mouth, are not present in every instance, but more or less involvement is the rule; they consist of furrows, discrete or crowded papillomatous formations, which may be sessile or slightly pedunculated, or the mucous membrane may be more or less granular-looking.

Chief Signs.—Presence of abdominal malignancy when occurring in adults; palmar and plantar keratosis; alopecia; dystrophic nail changes; pigmentation and papillary hypertrophy distributed as indicated above; development of cachexia.

Bismuth Poisoning.—*Characteristics.*—The tongue may be jet black, and the gums, both in the upper and lower jaw, may be deeply blackened, while both sides of the cheeks opposed to the teeth may have a long, broad band of black pigment. There may be black spots elsewhere in the mouth and throat.

Chief Signs.—See page 197.

Less Common Causes.—Cholangitis; lead poisoning (Gabler's or Oliver's spots); pernicious anemia; cirrhosis of the liver; ulcer of the stomach.

COLORED LINE ON THE GUMS

Blue gums is a racial characteristic among Negroes. A black line may occur in the gum in miners, due to the deposition of carbon. Spongy gums are red (see next symptom).

Lead Poisoning (*Plumbism; Saturnism*).—*Characteristics.*—A blue line on the gums is a valuable indication, but is not invariably present. Two lines must be distinguished: one, at the margin between the gums and teeth, is on, not in, the gums, and is readily removed by rinsing the mouth and cleansing the teeth; the other is the well-known characteristic blue-black line at the margin of the gum. The color is not uniform, but being in the papillæ of the gums, the line is, as seen by the magnifying glass, interrupted. The line may form in a few days after exposure and disappear within a few weeks, or may persist for many months. Nearly all workers in lead show a blue line, whether they suffer from plumbism or not.

Chief Signs.—History of occupation (painters, plumbers, glaziers); paroxysmal colic, with or without diarrhea; lead palsy (wrist-drop); encephalopathy; arteriosclerosis; may be multiple neuritis; basophilic degeneration of the red cells (Grawitz granulation); anemia (saturnine cachexia).

Pyorrhea Alveolaris (*Riggs' Disease*).—*Characteristics*.—In the advanced stages the gums become purplish and bluish, or the actual gingival margin may become darker purplish in hue, to some extent resembling the line of lead poisoning. In the earlier stages small purplish-black areas are sometimes seen just under the gum margin; these are due to the deposit of salivary calculus on the teeth. The discoloration of the advanced stages is due to simple congestion.

Chief Signs.—See page 199.

Bismuth Poisoning.—*Characteristics*.—There is a blackening of the gums, somewhat similar to that of lead, but of a deeper black and more widespread. The gums may be a jet black from their margins half-way to the buccal sulcus, and the tongue, cheeks, and other parts of the mouth and throat may show similar blackening.

Chief Signs.—History of use of bismuth paste into sinuses or wounded surfaces; salivation; stomatitis with swelling and areas of gangrene; pain and difficulty in swallowing; may be vomiting, diarrhea, albuminuria; usually recovery after removal of the dressing from the wound.

Chronic Copper Poisoning.—*Characteristics*.—There is a green line on the teeth, just where they enter the gums.

Chief Signs.—Occurrence in copper and brass workers; greenish tint to the skin and hair; nausea and slight intestinal catarrh; may be local paralysis, anemia, tremor, emaciation, and cutaneous eruptions.

Argyria.—*Characteristics*.—The earliest indication of the development of the discoloration is the occurrence of a dark-blue line on the edges of the gums, very similar to that produced by lead, but somewhat darker.

Chief Signs.—See page 196.

Less Common Causes.—Mercurialism (bluish); scurvy (purple); zinc poisoning (bluish).

SPONGY, BLEEDING, OR ULCERATED GUMS

(*Gingivitis*)

Localized or general redness and swelling may attend the eruption of the teeth, and a light gingivitis is of frequent occurrence in pregnancy.

Simple Ulcer of the Gums.—*Characteristics*.—The ulcer is usually ragged in outline or even serpyiginous, the edges are not clear cut, but irregular, rarely undermined, and surrounded by a red, inflammatory areola.

Chief Signs.—History of traumatism or presence of a jagged, carious tooth; soreness.

Traumatic Gingivitis.—*Characteristics*.—The actual gum margins are somewhat thickened, and on examination with a lens, small abraded patches are to be found, generally over the roots of the more prominent teeth at their cervical margins. There is no shrinkage of the interdental papillæ, which may be swollen and edematous. The general gum edge is shrunken and atrophic next to the teeth, but thickened and irregular a short distance away.

Chief Signs.—History of too vigorous use of a stiff toothbrush; exposure and soreness of the necks of the teeth, which may show small nicks at the labial cervical margin.

Catarrhal Gingivitis and Stomatitis.—*Characteristics.*—The mucous membrane covering the gum and cheeks becomes swollen, edematous, with a glazed, shiny surface, small herpoid patches not infrequently appearing both on the surface of the gum and buccal mucous membrane. The gums may be so congested that pulsation is complained of.

Chief Signs.—Occurrence at any age, often associated with a general coryza and catarrhal inflammation of the mucous membrane of the upper air passages; persistent discomfort; sensation of elongated teeth.

Chronic Gingivitis and Stomatitis.—*Characteristics.*—The whole of the mucous membrane of the gums and contiguous portions of the cheeks is bright red and injected. The disease affects the whole of the gum tissue equally. Four or five days after the onset the surface ulcerates in various positions, and the ulceration may spread to the contiguous surface of the cheeks or margin of the tongue. The disease begins insidiously with bleeding.

Chief Signs.—Occurrence mainly in adult life and middle age; great soreness; anemia; may be constitutional symptoms; chronicity.

Localized Hypertrophic Gingivitis.—*Characteristics.*—The affection is characterized by pedunculated or sessile enlargements of the gingival tissue in immediate relation to chronic infection and irritation around crowns, carious teeth, badly fitting dentures and their clasps, ill-designed bridges, projecting edges of fillings, and other forms of dental irritation.

Chief Signs.—Occurrence usually in adults; irregular appearance of blood after brushing the teeth; occasional appearance of blood in the mouth; painlessness; morning evil taste and bad breath.

Generalized Hypertrophic Gingivitis (Adenoidal).—*Characteristics.*—The free gum edges are enlarged at their margins, turgid, and easily bleed. The gum may be red, shining, bluish, and edematous, and later the swollen tissue becomes bloodless and anemic but generally remains edematous. The surface of the hypertrophied gum is irregular, turgid, and nodular. Pedunculated masses may be ultimately formed from the interdental papillæ, which bleed freely when manipulated or during the process of tooth-cleaning. The hypertrophy is confined to the upper and superficial structures of the gum. The extent of the gum affected is variable and depends upon the exciting cause, whether local or general.

Chief Signs.—Occurrence in children; association with anterior protrusion of upper incisors with wide separation; nasal obstruction; absence of discharge; pain slight or absent; dry mouth; sickly, fetid breath.

Aphthous Stomatitis (Dyspeptic or Infective Ulcer; "Canker" Sores).—*Characteristics.*—One, or more, commonly several, small and extremely painful ulcers occur on the gums, tongue, or buccal mucous membrane, with raised, red or reddish-yellow bases, and surrounded by a zone of bright red. A fresh attack may appear while the first one is subsiding. The ulceration is preceded by a small herpetic patch.

Chief Signs.—See page 192.

Ulcerative Stomatitis (Fetid Stomatitis; Putrid Sore Mouth).—*Characteristics.*—The morbid process begins at the margins of the gums, which become swollen and red, and bleed easily. Ulcers form, the bases of which are covered

with a grayish-white, firmly adherent membrane. These extend along the gum-line of the upper and lower jaws.

Chief Signs.—See page 192.

Secondary Syphilis.—*Characteristics.*—Mucous patches often occur on the gums as elsewhere in the mouth. When occurring in infants suffering from congenital syphilis they are generally flat, and rapidly ulcerate; the surface is white, irregular, and stippled, and surrounded by a coppery-brown line of inflammation. In adults they are irregular in outline, flat, and resemble the white irregular patches sometimes seen in the mouths of smokers.

Chief Signs.—See page 192.

Pyorrhea Alveolaris (Riggs' Disease; Suppurative Periodontitis).—*Characteristics.*—As a rule there is no spontaneous bleeding, but the spongy and congested condition of the gums leads to slight oozing of blood upon slight traumatism, as too vigorous brushing of the teeth.

Chief Signs.—Exudate of pus around the teeth when the pockets surrounding infected teeth are pressed upon; foul, spongy gums; collection of meat shreds between the teeth (often an early symptom); collection of tartar upon the roots with gradual loosening and finally loss of the affected teeth; tooth percussion (decrease in the normal sharp note); recession of the gums; x-ray.

Vincent's Angina (Necrotic Gingivitis: Trench Mouth).—*Characteristics.*—In this type there is fully developed ulceration, marked by a white line of necrotic tissue along the gum margin, extending a variable distance downward, and, if any attempt to remove the slough is made, considerable and even intractable bleeding occurs.

Chief Signs.—May be slight fever (100° – 102° F.); may be furred tongue, gastric disturbance and malaise; fetid odor; may be tenderness and pain; may be involvement of the cheek; swelling of the upper series of the deep cervical lymph glands; may be involvement of other parts of the mouth; presence of fusiform bacilli and spirochetes in the necrotic tissue.

Scurvy (Scorbutus).—*Characteristics.*—Gradually developing sore mouth and gums occur, which may become so swollen and turgid as to entirely cover the teeth. The hypertrophy affects the whole of the gingival tissue, and may extend downward into the buccal sulcus or into the junction between the tongue and the mucous membrane of the internal alveolar plate, but the most pronounced swelling is the first quarter of an inch of the free gum margin. The periosteum is not primarily affected, but latterly becomes engorged and shares in the swelling of the gingival tissues. Owing to the great swelling, the gums become tense, turgid, and easily bleed upon the least injury, and there is great fetor. The swollen and spongy tissue ulcerates and breaks down, often sloughing away until the necks of the teeth are left bare.

Chief Signs.—Onset insidious after several months of diet deficient in anti-scurvy vitamin; general weakness, pallor and anemia, hemorrhages from mucous membranes (except hemoptysis, hematemesis, and hematuria); petechiæ or ecchymoses into the skin or subcutaneous tissues, especially in loose skin, as the bend of the elbow; deep hemorrhages; edema of the ankles; secondary anemia; no leukocytosis; dietetic test (cure by fresh oranges and lemons).

Infantile Scurvy (Barlow's Disease).—*Characteristics.*—Scurvy usually makes

its appearance at the age in which the eruption of teeth is occurring; the gums will be found to be markedly inflamed, purplish, and bleeding occurs from the injured mucous membrane. In half the cases in which the teeth have not yet appeared, hemorrhagic gums will be found.

Chief Signs.—See page 34.

Mercurialism (*Mercury Poisoning*).—*Characteristics.*—In the acute or fulminant stomatitis the gums become injected, swollen and hemorrhagic, and may bleed when touched, or even bleed spontaneously. Ulceration and sloughing may take place, leaving bleeding areas.

Chief Signs.—See page 185.

Measles (*Morbilli*).—*Characteristics.*—In the hemorrhagic type there may be bleeding from the gum margins, often initiated by some slight abrasion. Bleeding from the gums is a frequent symptom in adult measles, but in such cases careful examination will show the presence of preëxisting chronic gingivitis, which has been increased by the specific disease.

Chief Signs.—See page 194.

Scarlet Fever (*Scarlatina*).—*Characteristics.*—When bleeding occurs in the mouth it usually takes place along the gum margins, due to ulcerative and suppurative processes set up by streptococcic invasion.

Chief Signs.—See page 766.

Gumma (*Tertiary Syphilis*).—*Characteristics.*—This lesion occurs on the gum as well as in other portions of the mouth. After breaking down it presents a deep, sloughing, irregular ulcer with sharp edges, serpiginous in outline, and frequently undermined. The surrounding tissues are indurated and thickened.

Chief Signs.—See page 193.

Gangrenous Stomatitis (*Cancrum Oris; Noma*).—*Characteristics.*—This affection is a rapidly spreading gangrene, starting on the gums or cheeks, and leading to extensive sloughing and destruction. The sloughing extends, and in severe cases the cheek is perforated.

Chief Signs.—See page 193.

Chronic Myeloid Leukemia.—*Characteristics.*—Bleeding from the gums may occur.

Chief Signs.—See page 35.

Hemophilia.—*Characteristics.*—The gums and mouth are frequently traumatized, and therefore constitute a favorite site for bleeding in hemophiliacs.

Chief Signs.—See page 825.

Less Common Causes.—Alveolar abscess; diabetes mellitus; malaria; phthisis; tuberculous ulcer; purpura hæmorrhagica; Hodgkin's disease; aplastic anemia; splenic anemia; cachexia; dyspepsia; erythema bullosum; actinomycosis; phosphorus necrosis; beriberi.

SWELLINGS OF THE GUMS AND ALVEOLAR PROCESSES

(See also "Spongy, Bleeding, or Ulcerated Gums," page 197.)

Acute Alveolar Abscess.—*Characteristics.*—There is severe pain and acute swelling, which may be limited to the gum or may involve to a considerable extent the periosteum of the jaw and even cause swelling of the whole side of the face.

Chief Signs.—Acute pulsatile pain; may be fever; may be spontaneous evacuation of pus; may be sinus formation; x-ray.

Epulis (*Fibroma*).—*Characteristics.*—In the early stage a small nodule is found projecting from between two contiguous teeth. It does not usually bleed freely when touched. It is hard, tense, and covered with an epithelial covering similar to that covering the rest of the gum tissue. It may be sufficiently large to cause separation of the teeth from the interdental septum, out of which it arises; at other times a generalized thickening of a large portion of the anterior or posterior surface below the gingival margin is seen.

Chief Signs.—Slow growth; painlessness; biopsy.

Sarcoma.—*Characteristics.*—This is a common tumor of the gums, often designated “epulis.” The disease commences as a small, soft, raised, corrugated nodule resembling granulation tissue, which may appear in any situation along the margins of the jaws or the buccal sulcus, most commonly at the line of juncture of the premaxillary bones, or in the lower jaw at the points of union of various portions from which the lower jaw is developed; sometimes from the periosteal tissues at the junction with the tooth socket or from the periodontal membrane or the marrow in the interdental septum between two teeth. The periosteal varieties cause hard, irregular, usually somewhat fusiform swellings. The surface of the growth, in any event, may become raw, red, nodular, and secondarily ulcerated, with a soft, easily bleeding surface; it shows great tendency to spread into the surrounding tissues.

Chief Signs.—Occurrence usually before the cancer age; usually rapid growth and extension; little pain; absence of lymph-gland involvement, unless secondarily infected; may be metastasis (face, skull, or body); biopsy.

Osteoma.—*Characteristics.*—This is not uncommon, especially in the upper jaw. The tumor consists of hard, nodular masses, the surface of which is generally convex and smooth and regular in outline, the epithelium becoming tightly stretched over the surface.

Chief Signs.—Slow growth; painlessness; absence of gland involvement.

Odontoma.—*Characteristics.*—This is a generic term including a number of benign tumors and cysts arising from the germs of teeth or developing teeth. A follicular odontome or dentigerous cyst is noted during or soon after the second dentition as a swelling of the alveolar process in the region of the bicuspid or molar teeth of either jaw and associated with an absence of one or more permanent teeth of that region; the missing tooth or teeth are found in the bony cyst, enveloped by a fibrous capsule which usually contains a viscid fluid and possibly bony spicules. If the tooth sac becomes very much thickened, the unerupted tooth may be found in a mass of fibrous tissue and much deformed (fibrous odontoma); fibrous odontomes are usually multiple, and are apt to occur in rickety children. Sometimes the thickened capsule ossifies sporadically, containing denticles composed of one or all three of the tooth elements (dentine, cementum, and enamel), or small, misshapen teeth. If the thickened capsule described above ossifies, the tooth will be found imbedded in a mass of cementum (cementoma—not found in man). A radicular odontome springs from the papilla and arises after the crown of the tooth is formed and while the roots are forming, and hence does contain dentine and cement, but no enamel. Composite odontomes are composed of irregu-

lar, shapeless masses of dentine, cement, and enamel. The radicular and composite odontomes present themselves as hard tumors associated with teeth. Occasionally a sinus forms, discharging pus.

Chief Signs.—X-ray.

Chronic Alveolar Abscess.—*Characteristics.*—Very often there is no very apparent swelling. After the symptoms of acute pain and even swelling of an acute abscess pass off, there may be left behind a slightly thickened mass of the alveolus where hypertrophic periostitis has taken place; such an area may be tender on pressure. There is usually an intermittently discharging sinus from a “gum boil” in the region of the apex of the tooth affected, or the sinus may track and open in the region of another tooth. “Periapical abscesses” may give no local signs or symptoms.

Chief Signs.—May be chronic ill-health or neuralgia or arthritis; x-ray.

Epithelioma.—*Characteristics.*—The disease commonly commences as a small nodule in some chronically ulcerated surface of the gums, and ulceration takes place, rapidly tending to fungate. The edges become everted, and a curious cauliflower nodular appearance of the surface is seen. The surface is generally covered with a seropurulent slough, which is fetid. The surface also bleeds easily. A curious stony hardness gradually appears.

Chief Signs.—Occurrence after forty; pain; metastasis to the lymph glands of the neck, which become bony, hard and fixed; early cachexia; biopsy.

Papilloma.—*Characteristics.*—This tumor is not as common in the gum tissues as in the tissues of the soft palate, tonsil, and uvula. It consists of a sessile or pedunculated mass of soft tissue arising from the gum itself, the surface being often surmounted by filiform processes projecting from the surface of the growth, which become ulcerated. In other cases, it is merely a small sessile nodule.

Chief Signs.—Biopsy.

Dental Cyst.—*Characteristics.*—A painless, smooth tumor may form, which in the upper jaw may invade the antrum. This is a fibrous sac found in connection with the root of a dead permanent tooth and containing fluid and often cholesterin crystals. The tumor may crackle on pressure.

Chief Signs.—X-ray.

Chronic Hypertrophic Gingivitis.—*Characteristics.*—The gums may become infiltrated with fibrous tissue and enlarge until the teeth are buried and the whole mouth filled. The gums stretch tightly over the surface of the thickened mass, which becomes gradually converted into bone from irritation of the periosteum. The bossy ridges formed are irregular in form, the surface being nodular, variable in thickness, affecting more of the alveolar outer plate unequally, and resembling the osteophytes of hypertrophic arthritis.

Chief Signs.—Occurrence usually in children or young adults who may have suffered from adenoidal or inflammatory hypertrophic gingivitis; absence of bleeding and pain in the mouth; reflex pain about the face.

Gumma (Late Congenital Syphilis).—*Characteristics.*—There is a diffuse, painless, semifluctuating swelling of the gum, which may resemble an alveolar abscess. It breaks down, presenting a deep, sloughing, irregular ulcer with sharp edges, serpiginous in outline, frequently undermined, and surrounded by indurated tissue.

Chief Signs.—Signs of syphilis; positive Wassermann.

Necrosis of the Jaw.—*Characteristics.*—There are pain and swelling of the gums and face, and an abscess forms, which may point in the mouth or externally on the face or neck. The discharge is offensive, and dead bone can be felt with a probe.

Chief Signs.—Presence of an etiological factor, as injury, caries of the teeth, syphilis, tuberculosis, mercury, phosphorus, bismuth, actinomycosis, or the exanthemata; may be fever and other symptoms of sepsis; x-ray.

Supernumerary Teeth.—*Characteristics.*—A number of extra teeth may exist; they are usually well formed.

Endothelioma.—*Characteristics.*—This tumor resembles sarcoma (see above). A special form, adamantinoma or multilocular cyst, may attain large size and is found most generally in the lower jaw near the angle.

Chief Signs.—Biopsy.

Myeloma.—*Characteristics.*—This tumor causes an expansion of the alveolar process, but sometimes perforates the bony capsule and invades the soft tissues.

Chief Signs.—Occurrence before twenty-five years; slow growth; biopsy.

Actinomycosis.—*Characteristics.*—The disease first manifests itself as a small nodule which later softens and forms sinuses from which is discharged a thin fluid and the characteristic yellow granules. It may resemble a simple chronic alveolar abscess. The surrounding tissues are indurated.

Chief Signs.—Occurrence among those who deal with cattle; insidious onset; may be extreme pain; hard, swollen lymphatic glands of the neck; cachexia; presence of the Actinomyces granules.

Less Common Causes.—Lymphatic leukemia; chondroma; adenoma; angioma; lipoma; myxoma; fibrocystic disease; chloroma; callus; mucous cysts.

SWELLINGS OF THE CHEEK

(*Inside the Mouth*)

Mucous Cysts.—*Characteristics.*—Thin-walled cystic swellings are present, which are filled with a glairy, clear fluid. The size of the cysts vary from a millet seed to a pea.

Epithelioma.—*Characteristics.*—Carcinoma of the malar mucosa is often found opposite carious teeth, the seat of predilection being the hindmost part of the cheek pouches, whence the neoplasm easily extends into the intermaxillary fold; or it may be an extension from the lip or jaw. It has the same characteristics as cancer elsewhere in the buccal cavity (see page 202).

Gaseous Tumor of Stenson's Duct.—*Characteristics.*—In glass-blowers and musicians Stenson's duct may become inflated with air and form a tumor in the cheek the size of a nut or an egg. Some have contained a mixture of air, saliva, and pus.

Less Common Causes.—Sarcoma; myxoma; endothelioma; cystic lymphoma; simple parotid cyst.

SWELLINGS OF THE PALATE OR ROOF OF THE MOUTH

Abscess of the Palate.—*Characteristics.*—An inflammatory, fluctuating swelling of the soft tissues of the hard palate may develop in connection with alveolar disease.

Chief Signs.—Severe pain; fever; aspiration of pus; x-ray of the teeth and jaws.

Gumma (Tertiary Syphilis).—*Characteristics.*—Gumma of the hard palate commences as a small nodule which gradually becomes larger and softer, presenting a bluish discoloration. It soon disintegrates, however, the mucous membrane is perforated, and ulcers of different sizes are formed with sharp, coarse margins and a yellow lardaceous base, exposing the raw necrotic bone beneath. The sequestræ are separated, perforating the hard palate. Gummata of the soft palate develop in a similar way; they are often multiple and may also be located on the palatal arches and the uvula.

Chief Signs.—See page 193.

Papilloma.—*Characteristics.*—This tumor may occur on the palatal arch or uvula. It is usually pedunculated, sometimes sessile. The surface is often surmounted by filiform processes projecting from the surface of the growth, and these become ulcerated.

Chief Signs.—Biopsy.

Endothelioma.—*Characteristics.*—This forms a flat or globular, smooth, or slightly gibbous eminence, of very hard or tough elastic consistency, covered with smooth, movable mucous membrane, and always situated laterally. Its size varies from a small tumor to one of enormous dimensions, so that the mouth may be completely filled. The surface, if injured, may ulcerate.

Chief Signs.—Slow growth; pain if ulcerated, radiating toward the ear; may undergo malignant change; biopsy.

Odontoma.—*Characteristics.*—This form of dental cyst, when occurring in the upper jaw, may cause a swelling of the alveolar process and adjacent palate bone.

Chief Signs.—See page 201.

Malignant Neoplasm of the Antrum of Highmore.—*Characteristics.*—This tumor may invade, besides the orbit, nose, and face, also the hard palate, sometimes to such an extent as to fill the mouth.

Chief Signs.—Bulging and softening of the walls of the antrum; fetid secretion from the nostril, containing blood-stained fibers of tissue; spontaneous loss of teeth; appearance of the growth in the nares; involvement of the lymph glands of the neck.

Carcinoma.—*Characteristics.*—Though not common as a primary growth of the palate, cancer does occur. The superficial form is found most frequently in the posterior part of the hard palate, occasionally in the soft palate. As long as a deep carcinoma is not ulcerating, it presents a flat tumor with a smooth, hard surface which protrudes into the oral cavity. It may easily perforate into the nose.

Chief Signs.—Occurrence after forty; slow growth; ulceration; late involvement of the lymph glands; biopsy.

Less Common Causes.—Sarcoma; fibroma; osteoma; lipoma; myxoma; adenoma; melanocarcinoma; cystadenoma; racemose aneurysm; angioma; fracture; infantile scurvy; tuberculosis; meningocele; dental cyst.

PERFORATED PALATE

Cleft-Palate.—*Characteristics.*—The most common form is the complete single cleft of the lip and palate. If the cleft in the lip is double it may be incomplete on one side. If there is a complete double cleft of the lip, there will also almost always be a complete double cleft of the palate. Cleft-palate may occur without a hare-lip, but it often accompanies a cleft limited to one side of the alveolus. In cleft-palate the septum of the nose is usually adherent to the palatine process opposite the side upon which the fissure exists. Cleft of the velum alone is common enough, but cleft of the midpart of the palate with intact velum is very rare. In those rare cases of cleft-palate double in front, the nasal septum is attached to the premaxillary bone only, and the premaxillary bone is not attached at all to the superior maxillary bone.

Chief Signs.—Presence from birth; interference with sucking, swallowing, and articulation; may be talipes and other deformities.

Gumma (*Tertiary Syphilis*).—*Characteristics.*—Perforation of the palate other than the congenital cleft is usually due to gummatous ulceration. On the hard palate the gumma breaks down early, forming a punched-out ulcer which causes necrosis of the underlying bone, and the sequestræ on separating perforate the hard palate, so that after healing a defect of variable size is left. The soft palate may likewise be perforated or become adherent to the posterior pharyngeal wall.

Chief Signs.—See page 193.

Less Common Causes.—Trauma; carcinoma; measles; smallpox; tuberculosis.

SKIN AFFECTIONS OF THE MOUTH

(Including the *Exanthematous Eruptions*)

(See also "Ulcers or White Patches in the Mouth," page 191.)

Scarlet Fever (*Scarlatina*).—*Characteristics.*—The exanthem of the skin is accompanied by deep punctiform reddening of the oral mucosa, the latter being very dry. The tongue appearance is typical ("strawberry" or "raspberry" tongue).

Chief Signs.—See page 766.

Chickenpox (*Varicella*).—*Characteristics.*—The lesions may occur in the mouth, especially on the hard palate, gums, and tongue. As soon as the blebs desquamate, there appears a yellowish-white shallow ulceration.

Chief Signs.—See page 775.

Measles (*Morbilli*).—*Characteristics.*—The Koplik spots are typical (see page 194). Sometimes an eruption of scattered spots similar to the cutaneous rash may develop over the entire mucous membrane of the mouth. During the stage of invasion, before the rash has appeared, the mucous membrane of the mouth and throat are hyperemic and frequently show a distinct punctiform rash.

Chief Signs.—See page 194.

Smallpox (*Variola*).—*Characteristics*.—Sometimes the eruption is present in the mouth, causing great soreness. The vesicles turn to ulcers, which may coalesce.

Chief Signs.—See page 770.

Secondary Syphilis.—*Characteristics*.—The first manifestations often include an erythema occurring in small or large patches upon the oral mucosa and especially on the palate; this usually disappears in a few days. The most frequent secondary manifestations are the mucous patches, consisting of circumscribed infiltrations of the submucosa, of roundish shape, which are sharply demarcated and raised flat above the mucous membrane; the epithelium above becomes gradually muddy, giving rise to the typical patches. These consist of a grayish-white thickening on the slightly swollen mucosa with a hyperemic marginal zone. The plaques are usually situated on the mucous membrane of the lips, cheeks, tongue, and palatal arches.

Chief Signs.—See page 192.

Leukoplakia Buccalis.—*Characteristics*.—This may occur as diffuse white patches scattered about the mucous membrane of the gums, cheek, and tongue; the surface is hard, dry, wrinkled and even nodular. Single or isolated patches also occur on the palate. The earliest symptom is minute patches of slight redness. These take on a blue tinge and spread, the surface becoming tense, white, and shining. After a period of weeks or months, during which a burning sensation may be complained of, the surface gradually becomes hard and white, and a small raised white spot forms, the center of which is harder than the periphery. The mucous membrane in the vicinity becomes gradually crinkled and may become "heaped up" into an actual nodule, separated from the surrounding surface by a slightly reddened line of demarcation. Linear markings and furrows may appear.

Lupus Vulgaris.—*Characteristics*.—Points of predilection in the mouth are the free margins of the lips, the vestibulum oris at the superior maxilla, the palatal vault, and the soft palate. There are at first the characteristic nodules, which later increase considerably in number, growing in close proximity. When the epithelium has been lost, there appear flat ulcerations which may merge, the secretions drying up to crusts. Their margins are lardaceous, often undermined, and present small nodules. Isolated parts may heal while the process continues at the margins.

Lichen Planus.—*Characteristics*.—This occurs in characteristic form in the mouth (being involved in about 50 per cent of all skin cases). There are the well-known lichen nodules of the lips, malar mucosa, tongue, hard and soft palate. Their size ranges from a pinhead to a pea; they are whitish, very coarse, and grow in isolated groups forming circles or curves.

Chief Signs.—See page 339.

Lupus Erythematosus.—*Characteristics*.—This affection may be communicated to the oral cavity from the face. There are grayish-white roundish plaques, surrounded by a narrow blue-red fringe. Sometimes there are erosions partly covered with crusts and loss of epithelium.

Chief Signs.—See page 171.

Erysipelas.—*Characteristics*.—In the mouth the affection usually commences from the socket of a recently extracted tooth, but has been shown to arise from pyorrhea alveolaris and Vincent's angina. A spreading red patch is observed, the edge of which is slightly raised and is somewhat more injected than the rearward

part. The disease spreads irregularly, so that the advancing edge is serpiginous and irregular. There is usually considerable edema of all surrounding parts.

Chief Signs.—See page 57.

Herpes Zoster.—*Characteristics.*—This may occur at any point in the mouth, especially the cheeks, pharynx, and tongue, as well as the gums. It is always unilateral, and sets in by forming groups of vesicles on the reddened and swollen mucosa. The covering of the vesicles is easily destroyed.

Chief Signs.—Acute onset; violent neuralgic pains; may or may not be affection of the skin; tendency to recrudescence.

Pemphigus.—*Characteristics.*—The mucous membrane may be involved secondarily to the skin, or prior to it, presenting circumscribed epithelial muddy places and whitish-gray deposits; these become detached later, leaving sharply demarcated patches behind. These may fuse and finally cover large areas, or lead to erosions and shallow ulcers. There may be severe pain, dysphagia, and fetor oris when extensive.

Chief Signs.—See page 776.

Erythema Multiforme.—*Characteristics.*—In the mouth the lesions are not very distinctive. There are roundish remnants of vesicles in the shape of detached shreds or easily bleeding yellowish deposits.

Chief Signs.—See page 339.

Less Common Causes.—Urticaria; scleroderma; vaccinia; scleroma; leprosy; rōtheln; erythema nodosum.

THE TONGUE

SYMPTOMS	PAGE
Pain in the Tongue (Sore Tongue)	208
Coated Tongue	210
Bright Red Tongue	212
Swollen Tongue	213
Swellings of the Tongue	215
Atrophied Tongue	216
Fissured Tongue	217
Ulcer of the Tongue	217
White Patches on the Tongue	219
Scarred Tongue	220
Tremor or Spasm of the Tongue	221
Inability to Protrude the Tongue	222
Deviation of the Tongue When Protruded (Unilateral Protrusion)....	222
Loss, Impairment, or Perversion of the Sense of Taste (Ageusia, Para-geusia, Cacogeusia)	223

See also "Dryness of the Mouth," page 187.

PAIN IN THE TONGUE

(*Sore Tongue*)

Traumatic or Decubital Ulcer of the Tongue.—*Characteristics.*—Where the tongue is injured by a sharp tooth or rough edge of a plate, a small nodule forms, painful during speech or mastication, which gradually grows and may assume the size of a hazelnut. With increase in size the painfulness increases. The surface of the nodule may break down, forming an ulcer.

Chief Signs.—Presence of carious, ingrowing, sharp-edged, or rough teeth, or defective plate; absence of induration; spontaneous healing when the cause is removed.

Chronic Superficial Glossitis.—*Characteristics.*—The patient usually complains of a sensation of having scalded the tongue or that the majority of foods appear to be peppery. The surface of the tongue may be sore to touch, although no apparent ulceration can be seen. The irritation of the tongue is not persistent, showing definite periods of exacerbation and remission, but hot or spiced foods invariably cause discomfort and may even give rise to acute pain. After eating, the symptoms may abate, coming on two or three hours subsequently. The patient may wake up in the night with an intense burning in the tongue. The burning pains may become greatly aggravated by mastication, smoking, or prolonged speaking. The pains and discomfort are strikingly severe, considering the slight anatomic changes, so much so that ingestion of food becomes restricted. The part affected is usually the dorsum, although both the lateral surfaces may be involved; but in most instances only one portion of the tongue is affected.

Chief Signs.—Occurrence mostly in females; may be redness and erythema of the part complained of, though at times definite changes are not obvious; chronicity with periods of quiescence.

Aphthous Ulcer (*Dyspeptic or Infective Ulcer; "Canker Sore"*).—*Characteristics.*—This minute and extremely painful ulcer may occur and recur at or near the tip of the tongue.

Chief Signs.—See page 217.

Carcinoma of the Tongue.—*Characteristics.*—Pain is not infrequently a very early symptom and may be the first to attract the patient's attention. It may even occur months before there are recognizable objective signs. It is usually of an intense persistent character, sometimes with a peculiar tendency to radiate to, or be most pronounced in, the top of the head or deep in the ear. Pain in the ear is usually associated with cancer of the edge, or under the surface of, or far back on, the tongue. Sometimes the patient will be conscious of little or no pain in the growth, but will suffer torment from pain at one of the sites mentioned.

Chief Signs.—See page 218.

Acute Papular Glossitis.—*Characteristics.*—There are burning pains in the

tongue with the formation of isolated white patches on its surface the size of a pea. These patches become erosions with red and serrated edges, the base covered with pus. The affection seems to heal spontaneously, after having continued for about three weeks.

Chief Signs.—Occurrence exclusively in women; commencement with slight febrile manifestations, lassitude, and anorexia; spontaneous healing within three weeks.

Pyorrhea Alveolaris (*Riggs' Disease; Suppurative Periodontitis*).—*Characteristics.*—The patient may complain of irregular, painful symptoms, either shooting pain, or at other times persistent aching, and finally of constant soreness of definite patches of the tongue, mainly the lateral margins, but occasionally the dorsum.

Chief Signs.—See page 199.

Pernicious Anemia.—*Characteristics.*—A recurrent sore mouth and tongue not infrequently attend the development of a case of Addisonian anemia and find a place in the anamnesis. This may assume the form of a mere hyperesthesia or a definite stomatitis, simple or ulcerative.

Chief Signs.—See page 35.

Trifacial Neuralgia.—*Characteristics.*—The pain may start in the side of the tongue, roof of the mouth, gum, or jaw. These spots are tender to the slightest pressure in some cases, but in others no such tenderness is detected. When the tongue is involved there may be changes in the sense of taste.

Chief Signs.—See page 31.

Pellagra.—*Characteristics.*—There is a burning sensation in the tongue.

Chief Signs.—See page 339.

Eczema of the Tongue.—*Characteristics.*—Burning and itching in the neighborhood of the patches are about all the symptoms complained of during the many years the patches may last.

Chief Signs.—See *Geographical Tongue*, page 220.

Neurosis (*Glossodynia*).—*Characteristics.*—There are indefinable, painful sensations in the tongue which may torment the patient for hours or days. Patients complain of all kinds of painful sensations in the tongue, for which they call in the physician.

Chief Signs.—Presence of hypochondriasis with apprehension of lingual carcinoma; absence of impairment of deglutition, the patient eating well and during eating forgetting his complaint; absence of objective signs of glossitis.

Tuberculous Ulcer of the Tongue.—*Characteristics.*—The surface of a tubercle breaks down rapidly and produces irregular patches of extremely painful ulceration.

Chief Signs.—See page 219.

Traumatic Ulcer of the Tongue.—*Characteristics.*—There may be extreme pain.

Chief Signs.—See page 218.

Abscess of the Tongue.—*Characteristics.*—Abscess of the tongue develops gradually, usually with an accompaniment of moderate pain.

Chief Signs.—Situation usually at the dorsal surface toward the base and at one side, rarely in the middle; swelling of the affected part, interfering with

swallowing and speaking; palpation, revealing the tense condition and a sensation of fluctuation.

Acute Diffuse Glossitis (*Deep Phlegmon of the Tongue*).—*Characteristics*.—There are violent pains in the tongue radiating into the ear and into the region behind the ear.

Chief Signs.—Occurrence in the wake of grave stomatitis (mercurial, infectious, or traumatic); high fever; great swelling of the tongue, which is dark violet or bluish-red; edema of the fauces, palatal arches, and entrance to the glottis.

Geographic Tongue.—*Characteristics*.—Rhagades or fissures may form and give rise to pain, while the affection otherwise gives no cause for complaint.

Chief Signs.—See page 220.

Less Common Causes.—Raynaud's disease (angiospasm); xerostomia (tormenting, painful sensation accompanying arrest of salivation); hypothyroidism (may be pain and tenderness); chronic abscess of tooth roots (referred pain); chronic tonsillitis (referred pain); angioneurotic edema; mercurialism; corrosive poisoning.

COATED TONGUE

The tongue, though usually roseate and moist in appearance, may be normally covered with a light, grayish coating resulting from the continuous desquamation of the superficial epithelium. Mastication of solid food causes it to disappear, liquid diet causes it to become thicker. Smokers and drinkers may have such a tongue. The coating may be thick enough to be scraped off in considerable amount. The normal color of the tongue may be changed by mastication or ingestion of blackberries, licorice, catechu, fresh nuts, tobacco, laudanum, rhubarb, and also from imbibition of red wine, certain iron compounds, and milk. It is pale in anemia, bluish in cyanosis, yellowish in jaundice.

Constipation.—*Characteristics*.—A furred tongue and foul breath may occur with headache and loss of appetite.

Chief Signs.—See page 5.

Nasal Obstruction.—*Characteristics*.—A thin, white, even furring of the tongue, which is dry, is characteristic in mouth-breathing and chronic nasal catarrh.

For causes of Nasal Obstruction, see Obstruction of the Nose, page 161.

Chronic Gastritis.—*Characteristics*.—The tongue is usually coated gray, or yellowish-gray; still, in many cases of well-marked chronic gastritis the tongue is clean and there is no offensive odor in the mouth.

Chief Signs.—See page 9.

Simple Acute Gastritis.—*Characteristics*.—The tongue is heavily coated and the breath fetid.

Chief Signs.—See page 9.

Acute Catarrhal Stomatitis.—*Characteristics*.—The tongue is furred, swollen, and indented by the teeth.

Chief Signs.—See page 191.

Acute Tonsillitis.—*Characteristics*.—The tongue is furred and the breath is heavy and foul.

Chief Signs.—See page 237.

Thrush (*Parasitic Stomatitis*).—*Characteristics.*—Thrush is at first manifested by the appearance of small white specks on the mucous membrane of the cheeks, gums, lips, and the dorsal surface of the tongue, which soon grow and confluence into membranous deposits, adhering rather firmly to the mucous membrane.

Chief Signs.—See page 192.

Rheumatic Fever.—*Characteristics.*—The tongue is moist, and rapidly becomes covered with a white fur.

Chief Signs.—See page 295.

Scarlet Fever (*Scarlatina*).—*Characteristics.*—The tongue at first is furred in the center, and red at the tip and edges; and through the white fur are often seen the swollen, red papillæ, which give the so-called “strawberry” appearance, particularly if the child puts out the tip of the tongue between the lips. In a few days the fur desquamates and leaves the surface red and rough, and it is this condition which some writers call the “strawberry,” or better, the “raspberry” tongue.

Chief Signs.—See page 766.

Measles.—*Characteristics.*—The tongue is furred, and the mucous membranes of the mouth and throat are hyperemic, and frequently show a distinct punctiform rash.

Chief Signs.—See page 194.

Lobar Pneumonia.—*Characteristics.*—The tongue is white and furred, and in severe toxic cases rapidly becomes dry.

Chief Signs.—See page 39.

Acute Appendicitis.—*Characteristics.*—The tongue is usually furred and moist, seldom dry unless general peritonitis sets in.

Chief Signs.—See page 476.

General Peritonitis.—*Characteristics.*—In the early stages there is a moist fur, later becoming dry and brown.

Chief Signs.—See page 463.

Acute Enterocolitis (*Diarrhea*).—*Characteristics.*—The tongue is dry and coated.

Chief Signs.—See page 463.

Typhoid Fever.—*Characteristics.*—Early in the disease the tongue is moist, swollen, and coated with a thin white fur, which, as the fever progresses, becomes dense. It may remain moist throughout. In severe cases, particularly those with delirium, the tongue becomes very dry, partly owing to the fact that such patients breathe with the mouth open. It may be covered with a brown or brownish-black fur or with crusts between which are cracks and fissures.

Chief Signs.—See page 701.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—The tongue is usually furred, but may be clean and red.

Chief Signs.—See page 31.

Septico-Pyemia.—*Characteristics.*—A furred tongue, often dry, is always present, with anorexia and constipation.

Chief Signs.—See page 33.

Cirrhosis of the Liver (*Alcoholic*).—*Characteristics.*—The tongue is furred, and there are symptoms of chronic intestinal catarrh.

Chief Signs.—See page 34.

Jaundice.—*Characteristics.*—A furred tongue, with anorexia and gastric disturbance, are rarely absent.

For causes of Jaundice, see page 732.

Delirium Tremens.—*Characteristics.*—The tongue is covered with a thick white fur, and when protruded is tremulous.

Chief Signs.—See page 695.

Typhus Fever.—*Characteristics.*—The tongue is furred and white and there is an early tendency to dryness.

Chief Signs.—See page 790.

White Tongue (*Lingua Alba*).—*Characteristics.*—The whole of the tongue, including the tip, or only a portion of the tongue, becomes quite white during an attack. There is no evidence of actual fur, but the individual papillæ and the epithelium covering the tongue become white and changed in appearance—not glossy, but dull white, giving somewhat the appearance of the whole of the tongue having been painted over with pure carbolic acid. Such a white patch may commence at one or other side of the tongue, and gradually spread over the whole dorsum; at other times it may commence far back upon the dorsum and spread forward. When the affection is connected with some infective process in the gums or teeth, the patch spreads from this locality.

Chief Signs.—Occurrence at intervals; evil taste in the mouth preceding the attack; development in three or four days; absence of any hardness (differing from leukoplakia); absence of any severe gastric symptoms, but sometimes association with chronic intestinal dyspepsia; presence of yeast in the scraping, but absence of any constant bacteriological findings.

Black Tongue (*Lingua Nigra*).—*Characteristics.*—It commences as a small black spot far back on the dorsum and gradually extends over the whole of the tongue. It may develop very rapidly and appear in twenty-four to forty-eight hours, or it may take several weeks to develop. It does not affect the cheek or lips. Sometimes the color may be scraped off, when the long filaments are found to consist of hypertrophied filiform papillæ (“hairy tongue”).

Chief Signs.—Short duration with tendency to recur; may be exceedingly bad taste in the mouth; spontaneous recovery.

Less Common Causes.—Scurvy; acute infectious gastritis; dengue; yellow fever; infectious endocarditis; lead poisoning; acute miliary tuberculosis; apoplexy; erysipelas; fecal impaction; gout; abscess of the liver; acute hepatitis; meningitis; migraine; relapsing fever; marginal exfoliative glossitis; hemiplegia; remittent fever; chronic alcoholism; strangulated hernia.

BRIGHT RED TONGUE

Scarlet Fever (*Scarlatina*).—*Characteristics.*—In a few days the fur which is at first present desquamates and leaves the surface of the tongue red and rough, and it is this condition which is called by some writers the “strawberry,” or better, the “raspberry” tongue.

Chief Signs.—See page 766.

Diabetes Mellitus.—*Characteristics.*—The tongue is usually red, dry, and

glazed, and the saliva scanty. The gums may become swollen, and in the later stages aphthous stomatitis is common.

Chief Signs.—See page 344.

Pernicious Anemia.—*Characteristics.*—The patient may complain of a sensation of having scalded the tongue or that the majority of foods seem peppery. The area complained of may occasionally be found red and brightly inflamed, the patch resembling that of an erythema seen on the cutaneous surface of the body. At other times even careful search with a hand lens will fail to show any definite changes. The part affected is usually the dorsum, although both the lateral surfaces may be involved, either separately or together; but in most instances only one portion of the tongue is affected. When the disease persists for a long time some atrophy of the epithelial surfaces takes place, and a smooth glazed appearance may be produced. In such cases the filiform papillæ are found diminished and often shed, so that patches of the tongue become slightly bald. In other instances where the inflammation is slightly more pronounced, superficial edema may occur. The patient may consult a physician because of fear of cancer.

Chief Signs.—See page 35.

Pellagra.—*Characteristics.*—Frequently there is redness of the tongue or mouth. The redness appears first at the tip, or tip and margins, and usually is slight, sometimes very slight. Less frequently it involves the entire dorsum of the tongue and more rarely the entire buccal mucosa. In the slighter grades of involvement the tongue is clean and unusually red. In more marked cases the epithelial surface may be denuded and the tongue appear flaming red, at times like raw beef—the “beefy tongue.”

Chief Signs.—See page 339.

Chronic Superficial Glossitis.—*Characteristics.*—There are irregularly disseminated bright red patches on the dorsum of the tongue and especially on the tip.

Chief Signs.—See page 208.

Acute Diffuse Glossitis (*Phlegmon of the Tongue*).—*Characteristics.*—The surface of the tongue is bluish-red to dark violet in color.

Chief Signs.—See page 210.

Less Common Causes.—Acute papular glossitis (the white patches become red erosions); duodenal ulcer.

SWOLLEN TONGUE

Simple Macroglossia.—*Characteristics.*—Abnormal enlargement of the tongue exists, the enlargement attaining at times the proportions of elephantiasis, reaching occasionally two or three times its normal size, or it may acquire abnormal length, though covered by normal mucous membrane. Ingestion of food may be hindered.

Chief Signs.—Usual existence at birth or occasional development in childhood or later; absence of signs of inflammation; may be coexistence of acromegalic or cretinic manifestations.

Mercurialism (*Mercury Poisoning or Susceptibility*).—*Characteristics.*—The tongue may undergo considerable swelling, showing the impression of the teeth.

Chief Signs.—See page 185.

Corrosive Poisoning.—*Characteristics.*—Swelling of the tongue and mouth generally may follow the ingestion of corrosive poisons, such as strong acids and alkalies (phenol, etc.).

Chief Signs.—See page 193.

Diffuse Lymphoma (*Lymphangiomatous Macroglossia*).—*Characteristics.*—Small vesicles appear on the surface and in the lingual substance, as a result of which the tongue may become so large as to protrude from the mouth.

Chief Signs.—May be congenital, or appear at puberty, or follow injury or operation; progressive enlargement, accentuated by acute attacks of inflammation; may be impairment of speaking and eating; may be dribbling of saliva, tartar-covered teeth, and foul breath; may be attacks of superficial glossitis with ulceration and fissures; may be displacement of the teeth, palate, and jaws; formation of cysts with indurated base, containing serum or blood.

Cretinism.—*Characteristics.*—The tongue of the infant looks large and hangs out of the mouth, and the whole face is bloated.

Chief Signs.—See page 41.

Myxedema.—*Characteristics.*—The tongue is large and clumsy in its movements, and the lips are thickened.

Chief Signs.—See page 41.

Acromegaly.—*Characteristics.*—The tongue in some instances is greatly enlarged, in conjunction with the gradual enlargement of the features and head.

Chief Signs.—See page 42.

Mongolian Idiocy.—*Characteristics.*—The tongue is large and coarsely papillated, and is frequently protruded and drawn back by the infant.

Chief Signs.—See page 42.

Furrowed or Fissured Tongue (*Lingua Plicata*).—*Characteristics.*—The tongue may be enlarged but not extremely so.

Chief Signs.—See page 217.

Angioneurotic Edema.—*Characteristics.*—The tongue may become quickly swollen and usually without warning, reaching its maximum in from one-half to two hours. The swelling is tense, not tender, does not pit on pressure, and is not purpuric. It lasts from a few hours to a day or two and disappears as rapidly as it comes. The face, lips, pharynx, genitals, and extremities may also be involved in swelling which may disappear in one part to appear in another. When the tongue is involved there is great local discomfort.

Chief Signs.—See page 67.

Acute Diffuse Glossitis (*Deep Phlegmon of the Tongue*).—*Characteristics.*—There is considerable swelling of the tongue, which may reach such proportions that the mouth is too small to hold it. There may be edema, extending to the fauces, palatal arches, and entrance to the glottis.

Chief Signs.—See page 210.

Abscess of the Tongue.—*Characteristics.*—The swelling of the affected part interferes with swallowing and speaking. As a rule the swelling is situated to one side, rarely in the middle of the tongue, and may attain to considerable size.

Chief Signs.—See page 209.

Less Common Causes.—Achondroplasia; actinomycosis; anemia (moderate swelling); aneurysm of the aorta; Ludwig's angina; salivary calculus; carcinoma;

cyanosis; mitral disease; anasarca; pemphigus; ranula; scurvy; food poisoning; urticaria; variola; erythema bullosum; insanity; wounds and burns.

SWELLINGS OF THE TONGUE

Fibroma (and Neurofibroma).—*Characteristics.*—It is most frequently found upon the surface of the tongue and has a more or less pediculated form. Occasionally fibromata are found deeply embedded in the lingual substance. Fibromata are usually but not always very hard, and are always sharply demarcated from the surrounding tissue. Their slow growth is characteristic. The surface of the softer tumors may ulcerate.

Chief Signs.—May be congenital or occur at any age; absence of discomfort or pain until they attain considerable size or ulcerate; negative Wassermann; absence of glandular enlargement.

Lipoma (and Fibrolipoma).—*Characteristics.*—The tongue is the most frequent seat of oral lipoma, which in most cases is located immediately under the surface, rarely intramuscularly. They are usually smooth to the touch, of roundish shape, and may attain to the size of a hen's egg. Usually there is a yellowish color apparent through the thin mucous membrane. The superficial tumors are movable, can be displaced by finger pressure, and their lobulated structure is palpable.

Chief Signs.—Absence of subjective symptoms no matter what the size; usual appearance in middle or later life (except the central ones, which are usually congenital); chronicity; absence of glandular enlargement.

Cavernous Angioma.—*Characteristics.*—This tumor has a bluish color, a gibbous surface, and a flabby feel. It can easily be evacuated by pressure. The growth may attain to considerable size and spread to the buccal fundus. It occurs at all points in the mouth, but most frequently in the tongue, and may be multiple, especially when located in the anterior part of the organ. Lumps or ridges of distended veins of a dark bluish or greenish-black color project slightly above the surface.

Chief Signs.—Compressibility with immediate refilling; enlargement when the head is low or jugular veins compressed.

Lymphangioma.—*Characteristics.*—Lymphangiomata often occur in the mouth, particularly in the tongue, in the shape of verrucous, nodiform, and diffuse growths. They can often be observed at an early age, and remain small for a long time. As a rule, they increase in size intermittently in connection with the occurrence of inflammatory processes of the tumor tissue, which inflammations are easily caused by topical injuries, and there may coincidentally be considerable swelling of the tongue or pronounced glossitis.

Diffuse Lymphoma (Lymphangiomatous Macroglossia).—*Characteristics.*—Small fluid-containing vesicles appear under the transparent surface of the lingual mucous membrane, which are diffusely disseminated over the larger part of the tongue, not only on its surface but in the lingual substance. As a result the tongue may become so large that part of it will protrude from the mouth.

Chief Signs.—See page 214.

Mucous Cyst.—*Characteristics.*—These may appear on the dorsal surface of the tongue, especially in the region of the papillæ vallatæ and the inferior surface of the tongue. They vary in size from a millet seed to a pea. Their walls are usually very

thin and transparent. There are practically no subjective signs unless inflammatory manifestations occur. They contain a clear, glairy material.

Syphilis of the Tongue.—*Characteristics.*—The manifestations of primary, secondary, and tertiary lues of the tongue are liable to take on an ulcerative type. For complete description of these lesions see under "Ulcer of the Tongue," page 217.

Papilloma (Wart).—*Characteristics.*—Papillomata seldom appear on the tongue and when they do are usually situated on the base. They usually remain small warty excrescences from the size of a pinhead to that of a pea. They are easily recognized from the fine and coarse eminences covering their surface. They cause no symptoms.

Carcinoma.—*Characteristics.*—This disease begins as an ulcer. For complete description see under "Ulcer of the Tongue," page 217.

Lingual Tonsillitis.—*Characteristics.*—The follicles on the base of the tongue become reddened and the region of the lingual tonsil is swollen.

Chief Signs.—Occurrence with faucial tonsillitis.

Hypertrophy of the Lingual Tonsil.—*Characteristics.*—The swelling affects either isolated follicles or the entire mass, the superficial veins being varicosely dilated. These veins may burst during coughing or vomiting, giving rise to bleeding. There is a feeling of foreign body in the mouth.

Chief Signs.—Guttural sound to the speech; interference with singing (fatigue); cough; direct examination, showing enlargement.

Less Common Causes.—Cartilaginous tumor; keloid; endothelioma; sarcoma; actinomycosis; nodiform and verrucous lymph glands; cystic lymphoma; cysts at the root of the tongue; struma of the lingual base (lingual thyroid).

ATROPHIED TONGUE

Bulbar Paralysis.—*Characteristics.*—The paralysis starts in the tongue, the superior lingual muscle gradually becomes atrophied, and finally the mucous membrane is thrown into transverse folds. In the process of wasting fibrillary tremors are seen. Owing to loss of power in the tongue the food is with difficulty pushed back into the pharynx and there is difficulty in the pronunciation of linguals.

Chief Signs.—See page 43.

Cerebral Syphilis.—*Characteristics.*—A patch of syphilitic meningitis, usually unilateral, may involve the hypoglossal nerve near its origin, producing atrophy of the paralyzed half of the tongue with deviation of the tongue when protruded, toward the paralyzed side. One of the commonest multiple palsies of the neighborhood is the Hughlings-Jackson syndrome, *viz.*, hemiatrophy of the tongue, paralysis of the trapezius and sternomastoid, and paralysis of the vocal cord and soft palate on the same side (11th, 12th, and 10th nerves).

Chief Signs.—History of syphilis; loss of power in the tongue; indistinct pronunciation; various cranial nerve palsies; positive Wassermann and spinal fluid.

Multiple Sclerosis (Disseminated Sclerosis; Insular Sclerosis).—*Characteristics.*—The tongue occasionally shows mild transitory palsies, with mild atrophies, unilateral and fibrillary twitchings. Ataxic movements of the tongue are frequent in the later stages. Occasionally subjective sensations of fullness, thickness, and difficulty in movement are observed.

Chief Signs.—See page 94.

Poliomyelitis (*Polioencephalitis, Bulbar and Pontine Forms*).—*Characteristics.*—Occasionally the hypoglossal nucleus is involved, with paralysis and atrophy of the tongue.

Chief Signs.—See page 628.

Less Common Causes.—Fracture of the base of the skull; cerebral tumor; tuberculous meningitis; poisoning from lead, arsenic, alcohol, and carbon monoxid.

FISSURED TONGUE

Slight fissures are not infrequently present in the tongue and have no significance. A striking condition of this type is the so-called “Fissured or Furrowed Tongue (*Lingua Plicata*),” in which the organ is normal in outline, and only occasionally enlarged, but is crossed both transversely and longitudinally by a number of deep folds. The condition is hereditary and is seen in members of the same family. The furrows are rounded in shape and give an appearance as if the tongue had been folded and the creases had remained. There are usually no discomforting symptoms, but it is occasionally mistaken for a pathological condition.

Tertiary Syphilis (*Gumma of the Tongue*).—*Characteristics.*—The tongue is less often involved than the palate, and in men (on account of the use of alcohol and tobacco) the lingual involvement usually takes the form of sclerotic glossitis, with smooth surface, owing to loss of papillæ; but this form of glossitis is complicated by deep rhagades or fissures, and erosions, usually at the lingual margins, which are apt to give rise to marked subjective symptoms. After healing they leave calluses which may cause deep furrows in the tongue.

Chief Signs.—See page 193.

Secondary Syphilis of the Tongue.—*Characteristics.*—These fissures are almost always on the border of the tongue, due to irritation of the teeth. They may occur in a mucous patch, in which case the fissure may be stellate and will show sloughy borders, or they may develop without a previous mucous patch. They may extend and form ulcers. After removal of rough teeth they heal quickly under antisyphilitic treatment.

Chief Signs.—See page 193.

Leukoplakia.—*Characteristics.*—At the edge of a plaque the margin may be raised, giving rise to rhagades or deep tears.

Chief Signs.—See page 219.

Less Common Causes.—Glossitis; cirrhosis of the liver; chronic dysentery; xerostomia; pellagra; erysipelas; mongolism; cicatrices of ulcers; typhoid fever.

ULCER OF THE TONGUE

Aphthous Ulcer (*Dyspeptic or Infective Ulcer; “Canker Sore”*).—*Characteristics.*—A minute and extremely painful ulcer or ulcerated patch occurs, commonly at the tip of the tongue, but frequently also on either side of the frenum below the tongue, in the frenum of the lower lip, and other situations along the gums. Small ulcerated patches appear, with raised, red, or reddish-yellow base surrounded by a

zone of inflammation often bright red in color. The superficial slough may be removed, leaving a raw, extremely painful surface. The ulcers may be single, or, more commonly, multiple. A fresh attack may appear while the first one is subsiding.

Chief Signs.—Usual absence of constitutional disturbance, but may be some gastro-intestinal premonitory symptoms; may be and often is a small herpoid patch, either single or multiple, preceding the ulceration; streptobacilli in the scrapings; ephemerality, with tendency to recurrence.

Simple Traumatic Ulcer.—*Characteristics.*—Severe simple ulcers may occur on the margins of the tongue, associated with carious teeth with sharp margins. The ulcer is usually ragged in outline, or even serpiginous, the edges are not clear-cut, but irregular, rarely undermined. As a rule the ulcer itself is convex, with perhaps a notch corresponding to a carious tooth, and is surrounded by a red, inflammatory halo. The base is usually reddish or reddish-yellow, and may be covered with a moist, mucoid slough. It may be excessively painful. There may be a slightly indurated base, but the induration is not very hard and does not give the sensation of a piece of wood or cardboard, like carcinoma. It is persistent as long as the cause remains.

Chief Signs.—Presence of a source of irritation (bad teeth or denture); no, or only slight, induration of the lymph glands; quick recovery on removal of the cause.

Dentition Ulcers.—*Characteristics.*—In infants a small shallow ulcer may appear where the point of the tongue comes in contact with an erupting tooth. They belong to the class of traumatic ulcer (see above).

Herpes.—*Characteristics.*—Small vesicles gradually appear, situated upon a slightly hyperemic base, which may become uncovered, leaving slightly raw, oozing patches, from which a clear, yellowish serum flows.

Chief Signs.—See page 179.

Carcinoma of the Tongue.—*Characteristics.*—This may occur on any part of the tongue, but is more usual on the dorsum and borders of its body. Ulceration may be the earliest objective sign and may appear before the induration is evident or not until the tumor has attained some size. It may present a smooth, red surface that joins the mucous membrane in a sharp outline, or it may be covered with a ragged slough, or foul septic granulations. One prominent characteristic is that its edges are usually rolled and prominent, seldom punched out, and almost never undermined; the ulcer tends rapidly to fungate, and a curious cauliflower, nodular appearance of the surface is seen. The surface is generally covered with a seropurulent, fetid slough, there is considerable pain, and the surface bleeds easily. As the ulcer increases in size, a curious stony hardness makes its appearance; the whole of the tissue surrounding the ulcer is hard.

Chief Signs.—Frequency in males, after forty; history of chronic irritation of the tongue (irregular teeth, tobacco, leukoplakia, gumma); progressive growth; early involvement of the submaxillary glands, which become hard and fixed; early loss of weight, with later, rapid emaciation and cachexia.

Tertiary Syphilis of the Tongue (Gumma).—*Characteristics.*—When fully established on the tongue, it shows a deep, sloughing, irregular ulcer with sharp edges, serpiginous in outline, frequently undermined. The tissue in the immediate neighborhood is indurated and thickened. The deep surface of the ulcer is generally covered with a gray or brown slough, and where not so covered is nodular,

irregular, and closely resembles a mass of indolent granulation tissue. The ulcerated surface rapidly becomes infected, and with the tendency toward maceration there is a tendency toward sloughing. The glands in the neighborhood are sooner or later involved but are usually movable and not especially hard. Pain is not severe.

Chief Signs.—See page 193.

Secondary Syphilis of the Tongue (*Mucous Patch*).—*Characteristics.*—On the sides of the tongue when irritated by the teeth, they show more or less ulceration, which has red, sometimes stellate outlines.

Chief Signs.—See page 192.

Primary Syphilis of the Tongue (*Chancre*).—*Characteristics.*—The primary sore may appear upon the tongue, but not nearly so frequently as upon the lips. It occurs in two rather distinct clinical forms: the smooth, and the ulcerated. The ulcerated chancre shows a shallow concave ulceration with a distinctly “parchment induration” of the base.

Chief Signs.—Incubation of five or six days to six weeks; early and marked enlargement of the cervical nodes, usually of both sides, not always greatest on the side of the sore, often however with one gland much more enlarged than the others (“satellite” or “pilot” gland); absence of severe pain; grayish, seropurulent discharge constantly escaping; *Spirochæta pallida* in the secretion; may or may not be positive Wassermann.

Tuberculous Ulcer of the Tongue.—*Characteristics.*—The tongue and cheek are the most common situations. There is at first a non-indurated mass of tissue appearing like granulation tissue, the surface of which rapidly breaks down and ulcerates, producing irregular patches of painful ulceration, the surface being covered by a grayish-white slough. The ulcers tend to bleed easily, show no tendency to heal, and are generally multiple. Glandular enlargement is a late symptom and is almost invariably associated with secondary infections.

Chief Signs.—Presence of severe pain, glandular infection, and absence of Wassermann reaction (differing from gumma); absence of induration with the presence of a soft fluctuating type of gland rather than hard and shotty (differing from epithelioma); may be presence of tubercle bacilli in the scrapings; presence of tuberculous lesions elsewhere, especially in the lung.

Whooping-Cough (*Pertussis*).—*Characteristics.*—An ulcer may involve the frenum as a result of repeated pressure of the frenum against the lower incisor teeth during the paroxysms of cough.

Chief Signs.—See page 358.

Less Common Causes.—Foot-and-mouth disease; actinomycosis; pemphigus; sprue; hemiglossitis with herpes; diphtheria; sarcoma; noma (by extension from the cheek); chronic ulcerative stomatitis or stomatocace (by extension from the gums); mercurialism.

WHITE PATCHES ON THE TONGUE

Leukoplakia (*Leukoma*).—*Characteristics.*—There are focal thickenings of the mucosa, which appear as smooth, dry, milk-white patches. The most recent look like mucous membrane which has been painted with weak silver nitrate solution. The older foci are pure white or bluish-white, with a kind of mother-of-pearl

luster. The plaques are sharply separated from the neighboring parts and often surrounded by a narrow infiltrated zone. Plaques in various stages of development may be present in the mouth at the same time. Here and there a ridge is raised at the margins, and finally detached, giving rise to rhagades or deep tears. Leukoplakia preferably invades the anterior part of the dorsal surface of the tongue, especially toward the tip and at the margins, though there may also be foci on the inner malar surface and the lips.

Chief Signs.—Occurrence in males, usually after fifty; may be history of excessive smoking or drinking; may or may not be history of syphilis; usual absence of pain; peculiar blunted sensation as of a foreign body in the mouth, provoking constant licking or picking; chronicity.

White Tongue (*Lingua Alba*).—*Characteristics.*—Here the whole tongue becomes white.

For description see under "Coated Tongue," page 212.

Thrush (*Parasitic Stomatitis*).—*Characteristics.*—The essential symptoms of thrush are the appearance upon the mucous membrane of the mouth usually beginning upon the tongue or inner surface of the cheeks of small white flakes, which resemble deposits of coagulated milk, but which differ from them in the fact that they cannot be wiped off.

Chief Signs.—See page 192.

Geographical Tongue.—*Characteristics.*—This rare condition commences as a small red, light red, or darkish purple spot which gradually spreads from the center, producing a glossy appearance, regular in outline and occasionally marked by concentric rings. It may desquamate and the atrophic center shows a slight depression, while the margins are at times slightly raised and brighter red. The spreading edge is grayish, grayish-white, sometimes white. The size is usually from one-quarter to one-half inch, and there is usually only one patch, though there may be several. When multiple patches occur the rings join one another, giving a curious wavy outline, resembling a map. The margins of the patches may actually coalesce and produce slightly raised areas. The lesions are usually on the dorsum of the tongue, though the tip and sides may be affected.

Chief Signs.—Hereditary history; occurrence usually under four years; may be premonitory itching; duration three to four weeks, with recrudescences for years.

SCARRED TONGUE

Epilepsy.—*Characteristics.*—During the clonic stage, tongue-biting is common, and when this has been frequently repeated lacerations may become deep enough to cause scarring, especially along the borders and at the tip.

Chief Signs.—See page 46.

Trauma.—*Characteristics.*—A scar on the tongue may be situated at the location of a previous laceration, incision, or operation wound. The most frequent causes of laceration are accidental biting of the tongue during sleep, careless chewing, or a fall while the tongue is held between the teeth.

Less Common Causes.—Gumma of tongue (healed ulcer); bulbar paralysis.

TREMOR OR SPASM OF THE TONGUE

General Paresis (*General Paralysis of the Insane*).—*Characteristics*.—A characteristic tremor of the tongue, lips, and circumoral facial muscles is a pretty constant early symptom. It is accentuated by emotion, attempts to speak, and on protrusion of the tongue, and consists of irregular, inconstant, more or less quivering movements passing over the tongue in rippling waves.

Chief Signs.—See page 100.

Epilepsy.—*Characteristics*.—During the seizure the tongue is involved in the tonic and clonic convulsions which characterize the attack, and is frequently pressed between the teeth where it is bitten and injured.

Chief Signs.—See page 46.

Senile Tremor.—*Characteristics*.—There is a gentle anteroposterior tremor of the tongue with a synchronous movement of the orbicularis oris.

Chief Signs.—Occurrence in old age; bilateral tremor of the head, jaws, hands, and lips; absence of rigidity and other signs of paralysis agitans.

Paralysis Agitans (*Parkinson's Disease*).—*Characteristics*.—Tremor may implicate the tongue and lips in association with the coarse rhythmical tremor of the extremities and head.

Chief Signs.—See page 41.

Delirium Tremens.—*Characteristics*.—The tongue, covered with a thick, white fur, is tremulous when protruded; this accompanies a general muscular tremor.

Chief Signs.—See page 695.

Bromism.—*Characteristics*.—The tongue is tremulous and saliva dribbles from the mouth.

Chief Signs.—History of ingestion of the drug; blunting of the intellectual faculties (impaired memory, listlessness); staggering gait; bluish, acnelike eruption on the skin.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics*.—When the tongue is involved it is ataxic rather than tremulous, the lingual trouble being associated with a peculiar constant rolling movement of the tongue on the floor of the mouth even when the patient is not speaking. There is often an annoying sensation as if the tongue were covered with blotting paper, which the patient tries to get rid of by the restless rolling of his tongue.

Chief Signs.—See page 104.

Typhoid Fever.—*Characteristics*.—When the patient becomes delirious there may be marked tremor of the tongue and lips.

Chief Signs.—See page 701.

Tic.—*Characteristics*.—The tongue and jaws are occasionally the seat of frequently repeated, explosive, purposeless, grimacing movements. Such "tikers" often have explosive articulation ("word swallowing"), sudden stoppage of speech. The tongue may be protruded from the mouth, pressed into the cheek, rolled up, or otherwise wriggled during the performance of the act (habit spasm).

Chief Signs.—See page 45.

Bulbar Paralysis (*Glosso-labio-laryngeal Paralysis*).—*Characteristics*.—In the process of wasting which the tongue gradually undergoes, fibrillary tremors are

seen accompanied by weakness in moving the organ in mastication and labial pronunciation.

Chief Signs.—See page 43.

Multiple Sclerosis (*Disseminated Sclerosis*).—*Characteristics.*—The tongue usually shows unilateral and fibrillary twitchings, with ataxic movements in the later stages and occasionally modifications of taste.

Chief Signs.—See page 94.

Friedreich's Ataxia.—*Characteristics.*—The tongue is ataxic rather than tremulous, its movements being slow, thick, and clumsy, resulting in the patient talking as though he had a foreign body in his mouth ("hot-potato" speech).

Chief Signs.—See page 94.

Neurosis.—*Characteristics.*—Spasms of the tongue, when not demonstrably of organic origin, are "hysterical" as a rule.

Chief Signs.—See page 40.

Less Common Causes.—Tobaccoism; chronic alcoholism (tremor of the lips).

INABILITY TO PROTRUDE THE TONGUE

If the tongue is paralyzed the lesion involves both hypoglossal nuclei. It is accompanied by atrophy if the lesion is nuclear; but not, if the lesion is cortical or supranuclear.

Bulbar Paralysis (*Glosso-labio-laryngeal Paralysis*).—*Characteristics.*—The tongue becomes atrophied, wrinkled, and tremulous, and finally lies inert on the floor of the mouth. The patient cannot protrude the lips, nor whistle. Dysphagia and dysarthria are present.

Chief Signs.—See page 43.

General Paresis (*General Paralysis of the Insane*).—*Characteristics.*—In the later stages the tongue becomes immovable and the patient inarticulate.

Chief Signs.—See page 100.

Less Common Causes.—Syphilitic basal meningitis; caries of the atlas; diphtheritic paralysis; lead poisoning; tabes dorsalis; cerebral tumor; caries of the base of the skull; tuberculous meningitis; tumor of the upper cervical cord; pseudo-bulbar paralysis.

DEVIATION OF THE TONGUE WHEN PROTRUDED

(*Unilateral Protrusion*)

If atrophy of the affected half of the tongue exists, the lesion is nuclear or infranuclear; if atrophy is not present it is cortical or supranuclear. In peripheral facial paralysis the tongue may appear to be deviated to one side, but careful scrutiny shows this not to be the case, the apparent deviation being due to facial asymmetry.

Hemiplegia.—*Characteristics.*—The tongue, when protruded, deviates to the paralyzed side, since the tongue is pulled rather than pushed out of the mouth by the action of the genioglossus muscles, which have their bony origin behind the symphysis of the lower jaw, the weakening of the muscle on the paralyzed side

allowing overaction of the one on the sound side. There is no atrophy, as the lesion, usually in the internal capsule, is supranuclear (above the hypoglossal nucleus). The tongue can be moved from side to side within the mouth, but there may be some interference with the lingual consonants.

For causes of Hemiplegia, see page 314.

Syringomyelia (*Spinal Gliosis*).—*Characteristics*.—Occasionally one hypoglossal nucleus is involved with consequent paralysis and atrophy of one side of the tongue, producing deviation of the tongue toward the paralyzed side on protrusion.

Chief Signs.—See page 317.

Less Common Causes.—Basilar aneurysm; partial caries of the upper cervical vertebræ; central facial paralysis; hemiglossitis; cerebral tumor; cervical cord tumor; wound of the neck.

LOSS, IMPAIRMENT, OR PERVERSION OF THE SENSE OF TASTE

(*Ageusia, Parageusia, Cacogeusia*)

In general, a heavily coated tongue will have impaired taste function, the taste bulbs being covered by the deposit. Irritating condiments will also impair the sense of taste. A large group of taste reflex perversions are found in vagotonic individuals, chiefly of gastric origin.

Simple Acute Rhinitis (*Coryza*; "*Cold in the Head*").—*Characteristics*.—Swelling of the mucous membrane of the nose with consequent obstruction brings on an early perversion or absence of the sense of taste and smell. In reality the fundamental tastes, which are those of salt, sweet, sour, and bitter, are generally retained, since they are innervated by the tongue, while all the infinite variety of tastes which are in reality predicated upon the sense of olfaction are perverted or destroyed.

Chief Signs.—See page 161.

Acute Rhinitis of Infectious Diseases.—*Characteristics*.—During the early stages of certain infectious diseases, especially measles and influenza, the edema of the membrane of Schneider may interfere with olfaction and hence with taste.

Nasal Obstruction.—*Characteristics*.—Considerable or complete nasal obstruction from whatever cause may bring about interference with the olfactory element of taste.

For causes of Nasal Obstruction, see page 161.

Hay-Fever (*Rhinitis Hyperæsthetica*).—*Characteristics*.—Many persons have a temporary diminution of taste sense (*i.e.*, olfaction, taste), and after frequent recurrent attacks the condition may be permanent.

Chief Signs.—See page 163.

Peripheral Facial Paralysis.—*Characteristics*.—The sense of taste may, or may not, be abolished on the anterior two-thirds of the tongue on the paralyzed side. Taste may not be affected at all in mild cases of paralysis, owing to the limitation of the neuritis to the nerve distribution upon the face. In the more severe cases, on the other hand, taste is usually lost early in the disease, owing to neuritic extension along the bony canal, involving the chorda tympani.

Chief Signs.—See page 47.

Trigeminal Nerve Paralysis.—*Characteristics.*—Taste is impaired in the anterior two-thirds of the tongue on the affected side, but does not remain totally lost, and though the patient is unable to feel the contact of food or other objects on that side, he still retains acute sense of taste at the back of the tongue.

Chief Signs.—May be symptoms of cerebral tumor, bulbar paralysis, tabes, syringomyelia, or basal meningitis; may be inability to move the lower jaw to the healthy side, with deviation of the jaw to the paralyzed side when the mouth is open; anesthesia of the corresponding half of the face and scalp, including the cornea and conjunctiva; hemianesthesia of the tongue; diminished secretion of tears, nasal mucus, and saliva on the affected side; anesthesia of the teeth on the paralyzed side with tendency to drop out.

Neurosis and Psychoneurosis.—*Characteristics.*—Psychogenic taste modification, such as metallic tastes, interpreted as poisons, are frequent in "hysterical" conversions, in certain projections of paranoid individuals, in cyclothymias (mild excitements and depressions), and in neuroses. A desire to taste or eat disgusting substances may occur in some of the dementing psychoses.

Chief Signs.—See page 738.

Mercurialism.—*Characteristics.*—A metallic taste in the mouth accompanies the salivation.

Chief Signs.—See page 185.

Bismuth Poisoning.—*Characteristics.*—Similar to mercurialism (see above).

Chief Signs.—See page 197.

Dyspepsia.—*Characteristics.*—There may be a bad taste in the mouth sufficient to be complained of.

For causes of Dyspepsia, see page 487.

Abscess of the Lung.—*Characteristics.*—A bad taste accompanies the expectoration of fetid pus.

Chief Signs.—See page 360.

Gangrene of the Lung.—*Characteristics.*—A bad taste is produced by the passage through the mouth of the intensely fetid tissue which is raised.

Chief Signs.—See page 361.

Bronchiectasis.—*Characteristics.*—A bad taste may occur, due to raising of fetid or acidlike sputum.

Chief Signs.—See page 359.

Jaundice.—*Characteristics.*—A bitter taste may be complained of.

For causes of Jaundice, see page 732.

Pyorrhea Alveolaris (Riggs' Disease).—*Characteristics.*—At times the patient may complain of a disagreeable taste in the mouth, but this is far from constant.

Chief Signs.—See page 199.

Dental Caries.—*Characteristics.*—There may be a slightly disagreeable taste if the cavity is large and contains offensive material.

Chief Signs.—See page 30.

Epilepsy.—*Characteristics.*—Gustatory hallucinations may occur as a part of the epileptic aura, alone or combined with olfactory hallucinations (cacosmias).

Chief Signs.—See page 46.

Tumor of the Temporoparietal Lobe (Uncinate Gyrus).—*Characteristics.*—Seizures occur (uncinate fits), in which there are unpleasant, perverted, sub-

jective sensations of taste and smell, which may or may not be accompanied by a "dreamy state" with reminiscence, fear, smacking movements of the lips, chewing movements of the jaws, and sometimes spitting. There may be unconsciousness, during which the arm opposite the lesion moves about slowly, deliberately and apparently purposely. The attacks may be succeeded by transient, bilateral, incomplete loss of the senses of taste and smell. In cases with destructive lesions of the uncinate lobe, there is never complete loss of taste or smell, but a bilateral impairment is not uncommon.

Chief Signs.—May be general symptoms of intracranial tumor; x-ray.

Iodism and Bromism.—*Characteristics.*—The sense of taste may be affected as in simple acute rhinitis (see above).

Chief Signs.—See pages 164, 221.

Less Common Causes.—Glossopharyngeal paralysis; stomatitis; lesions of the tractus solitarius from syphilis, tumor, multiple sclerosis, syringomyelia, poliomyelitis (total or one-sided loss of taste); lesions of the corpus mammillaria, tractus tegmenti dorsalis, and Ammon's horn; simple chronic rhinitis; gustatory agnosia; bulbar paralysis; nasal polypus; atrophic rhinitis; use of drugs (arsenic, asafetida, copper, lead, paraldehyd, tartar emetic, valerian); duodenal ulcer; empyema; hepatic disease; pancreatic disease; peritonitis; tonsillitis; typhus; variola; fecal accumulation; pregnancy.

THE TEETH

SYMPTOMS	PAGE
Pain in the Teeth (Toothache; Sensitive Teeth)	225
Early Dentition	227
Delayed Dentition	228
Grinding of the Teeth	228
Carious Teeth	229
Loosening of the Teeth	229
Abnormal Shape and Structure of the Teeth	230

PAIN IN THE TEETH

(Toothache; Sensitive Teeth)

The majority of pains in the teeth are due to tooth disease.

Hypersensitive Dentine.—*Characteristics.*—A sharp pain of very short duration is produced by the infiltration of acid, salt, or sweet substances into contact

with the hypersensitive surface, or by exposure of the dentine to cold air. Food in mastication may be forced against this surface and cause pain, which immediately subsides but may be repeated for some time. The sensitiveness of dentine varies much in different individuals.

Chief Signs.—May be dental caries, enamel erosion, abrasion, fracture, or leaky fillings; testing by contact of a sharp instrument against the suspected area, when the characteristic pain is produced, which ceases upon removal of the instrument (or by a blast of cold air against the area with a syringe).

Exposed Pulp.—*Characteristics.*—There may be excruciating pain following mastication, or pressure or suction exerted upon the cavity by means of the tongue. Increase of pain, or throbbing pain following the use of salt or acid foods is fairly indicative of a practical exposure.

Chief Signs.—Usually presence of caries; visualization of the exposed pulp after cleansing the cavity, or pain on probing or pressure with a pellet of cotton.

Acute Pulpitis.—*Characteristics.*—In the stage of arterial hyperemia paroxysms of sharp pain lasting from minutes to hours follow upon an application of cold to a carious cavity, an unbroken enamel surface, a filling, or an area of erosion or abrasion; the pains are vaguely located. Later, as venous hyperemia develops, the pain becomes continuous, and is more a heavy boring pain and sense of fullness rather than sharp agony. Under a capping or filling pressing on the pulp or thin dentine, the pain may begin as a slight pain and gradually increase in intensity, or it may respond as a sudden agony.

Chief Signs.—May be caries, or large or leaky fillings; may be referred pains (face, eye, ear, neck, scalp, etc.); may be functional disorder of the eye, ear, or brain; pain on tapping the affected tooth.

Abscess of the Pulp.—*Characteristics.*—If the pus has drainage there may be only a dull, gnawing pain; but if the pus cannot find exit intense pain may exist, appearing at intervals, increased by heat and relieved by cold, and not definitely localized.

Chief Signs.—Diminished response to cold and increasing sensitiveness to heat; evacuation of pus from the pulp.

Acute Alveolar Abscess (*Acute Apical Abscess; Acute Periodontitis; Acute Pericementitis*).—*Characteristics.*—This may cause acute throbbing pain, which after perforation of the alveolar process becomes less acute or temporarily ceases. The pain may be poorly localized.

Chief Signs.—Acute onset; redness of the gum, followed by swelling and later fluctuation and pointing; extrusion, looseness, and dullness to percussion; may be fever; may be rupture with fistula formation; x-ray.

Pyorrhea Alveolaris (*Riggs' Disease; Suppurative Periodontitis*).—*Characteristics.*—In the first stage (acute periodontitis) any attempt to touch the tooth or to bite upon it may cause intense pain. The pain is continuous, and worse at night, but is usually not increased by changes of temperature; heat usually gives relief. On palpation of the alveolar process, acute pain is frequently complained of over the socket of the involved tooth or teeth. When the process becomes chronic (second stage) pain is not a common symptom (absent in 50 per cent); occasionally acute pain may be referred to one or other position, usually between the teeth. As chronic alveolar osteitis develops (third stage) pain becomes an uncertain symptom;

if complained of, it usually occurs in bouts, associated with acute local suppuration in one or another of the affected areas.

Chief Signs.—See page 199.

Pulp Nodules (*Pulp Stones*).—*Characteristics.*—There may be no pain, or there may be intractable pain without sufficient caries to cause acute pulp disease or without any external evidence of disease whatever. The tooth may be excessively sensitive to what are ordinarily mild sources of irritation; cool water directed into a shallow cavity produces paroxysmal and excruciatingly painful response. Large nodules, on the other hand, may render the pulp almost insensitive.

Chief Signs.—May be reflex neuralgia (ear, scalp, eye, face); x-ray.

Less Common Causes.—Hypercementitis; trauma; pregnancy; influenza; malaria; trigeminal neuritis; pressure upon the trigeminal nerve; constipation; gout.

EARLY DENTITION

The deciduous or milk teeth are twenty in number. The time at which they appear is subject to considerable variation even under normal conditions. The following is the order and average time of appearance of the different teeth:

<i>Deciduous Teeth</i>	<i>Months</i>
1. Two lower central incisors.....	6 to 9
2. Four upper incisors.....	8 to 12
3. Two lower lateral incisors and four anterior molars....	12 to 15
4. Four canines	18 to 24
5. Four posterior molars	24 to 30

<i>Age</i>	<i>Number of Teeth</i>
At 1 year a child should have.....	6
At 1½ years a child should have.....	12
At 2 years a child should have.....	16
At 2½ years a child should have	20

The following table gives the average time of appearance of the permanent teeth, which are thirty-two in number:

<i>Permanent Teeth</i>	<i>Years</i>
1. First molars	6
2. Incisors	7 to 8
3. Bicuspids	9 to 10
4. Canines	12 to 14
5. Second molars	12 to 15
6. Third molars	17 to 25

The order in which the teeth appear is much more regular than their time of appearance. Infants may be born with teeth, though this is rare. It is not at all uncommon for the first teeth to appear in the fourth month. Nursing infants are, as a rule, a little earlier in their dentition than those artificially fed.

Congenital Syphilis (*Hereditary Syphilis*).—*Characteristics.*—Syphilitic children are rather prone to early dentition, and under such circumstances rapid and early decay is likely to occur.

Chief Signs.—See page 230.

Less Common Causes.—Tuberculous diathesis.

DELAYED DENTITION

In many healthy infants no teeth appear before the tenth month, sometimes even later. If symptoms of malnutrition date from birth, dentition is almost invariably delayed. Provided, however, an infant is well nourished and thrives properly for the first six or eight months the eruption of teeth is likely to go on steadily after this time, even though the child may later have chronic indigestion or suffer from extreme malnutrition from any cause except rickets.

Rickets (*Rachitis*).—*Characteristics*.—This is the commonest cause, perhaps, of delayed dentition. It is apt to be late and difficult, *i.e.*, it is associated with attacks of indigestion or other disturbances which may be serious. Individual cases, however, present great variation in this regard. In about 50 per cent the first teeth are cut on or before the eighth month; in 20 per cent not until twelve months; and in 8 per cent as late as fifteen months. Even though the first teeth come at the usual time, the progress of dentition is usually retarded by the development of the disease. The character of the teeth, however, is usually good, though they may be small and badly formed.

Chief Signs.—See page 13.

Cretinism (*Sporadic or Acquired*).—*Characteristics*.—The teeth appear very late and are apt to decay early. The latest dentition is seen in this disease. It is not rare for the first teeth to appear as late as eighteen months or two years. As a rule, dentition and ossification of the bones of the head go on in a corresponding manner. The second dentition may not begin until adult life.

Chief Signs.—See page 41.

Idiocy and Imbecility.—*Characteristics*.—Great irregularities in dentition are common in children with defective mental development. These are more in the order of irregularities in the order in which the teeth appear.

Chief Signs.—See page 41.

Less Common Causes.—Infantile scurvy; Mongolian imbecility; anosteoplasia.

GRINDING OF THE TEETH

This symptom is of little importance in diagnosis. It is usually an accompaniment of some gastro-intestinal disorder, and occurs also in neurotic children whose sleep is fitful.

Round-Worm Infestation of the Intestines.—*Characteristics*.—Disturbed sleep with grinding of the teeth at night is given as one of the symptoms of this condition, but too much importance is placed upon this symptom as evidence of worms. It is, however, perhaps more common with infestation of *Ascaris lumbricoides* than with other worms.

Chief Signs.—Occurrence usually between the third and tenth years; indefinite symptoms of intestinal irritation (indigestion, colic, tympanites, anorexia); may be prolonged low fever; may be nervous phenomena (chills, headache, vertigo, hallucinations, convulsions, tetany, transient strabismus, hemiplegia, aphasia); eosinophilia; discovery of the worms or ova in the stools.

Tuberculous Meningitis (*Basilar Meningitis*).—*Characteristics*.—Intense grinding of the teeth may occur.

Chief Signs.—See page 89.

Less Common Causes.—Chorea; epilepsy; hydrocephalus; cerebral anemia or hyperemia; anterior poliomyelitis; cerebral tumor; smallpox; rheumatism; gout.

CARIOUS TEETH

Dental caries affects civilized populations to a much greater extent than native races. The destruction of the tooth tissues may be, and can often actually be proved to be, due to some malformation either of the tooth structure itself or of the position of the individual teeth in relation to one another. The teeth become destroyed by the action of bacteria upon fermentable foodstuffs which become attached or impacted between teeth. Certain diseases predispose to caries, as listed below.

Pregnancy.—*Characteristics*.—Many women suffer from dental caries ("For every child a tooth").

Chief Signs.—See page 502.

Diabetes Mellitus.—*Characteristics*.—Caries and pyorrhea alveolaris are apparently favored by this disease.

Chief Signs.—See page 344.

Pernicious Anemia.—*Characteristics*.—The teeth are often very bad, and pyorrhea alveolaris may be said to be present in all cases.

Chief Signs.—See page 35.

Congenital Syphilis.—*Characteristics*.—The first teeth erupt earlier than normally but are also prone to early decay.

Chief Signs.—See page 230.

Cretinism.—*Characteristics*.—The first set of teeth appear very late and are apt to decay early.

Chief Signs.—See page 13.

Less Common Causes.—Acid dyspepsia; exophthalmic goiter; trauma of the teeth; nasal obstruction; myxedema; phosphorus poisoning; typhoid fever; leukemia; nervous exhaustion.

LOOSENING OF THE TEETH

As the permanent teeth grow and push upward during the second dentition, the permanent teeth cause atrophy of the roots of the first teeth and gradually cut off their blood supply, so that they loosen and fall out. The teeth may become loose in any acute wasting disease.

Pyorrhea Alveolaris (*Riggs' Disease; Suppurative Periodontitis*).—*Characteristics*.—In the third stage of this common disease, that of chronic, alveolar osteitis, the normal alignment of the teeth in the dental arch is irregular, due to the loss of the bony sockets and yielding of the softened bone during mastication. The slightest lateral pressure produces considerable movement of the tooth in its socket; pressure applied in the direction of the root from a crown may cause the tooth to move up and down slightly in its socket. Certain areas of the jaw are

more affected than others, so that variations in the degree of looseness of the teeth in various parts occurs. Some of the teeth may become so loose as to be removable with the fingers, and have even been known to drop out or be sneezed out.

Chief Signs.—See page 199.

Mercurialism (*Chronic Mercury Poisoning*).—*Characteristics.*—In the more severe cases and in those of longer duration the teeth are loosened, sometimes being so loose that they can be picked from the gum.

Chief Signs.—See page 185.

Scurvy (*Scorbutus*).—*Characteristics.*—Owing to the severe gingivitis and generalized periodontitis in this disease, the teeth soon become loose and may be found easily movable. They may even fall out.

Chief Signs.—See page 199.

Acute Alveolar Abscess.—*Characteristics.*—There is extension and temporary looseness of the affected tooth.

Chief Signs.—See page 226.

Less Common Causes.—Malocclusion of the teeth; diabetes mellitus; leukemia; gangrenous stomatitis; phosphorous poisoning; xerostomia; purpura; trigeminal neuralgia (may drop out on the affected side); resorption of the roots of the permanent teeth; ulcerative stomatitis; catarrhal stomatitis; trigeminal nerve paralysis (cerebral tumor, tabes dorsalis, syringomyelia, basal meningitis); malignant neoplasm of the antrum of Highmore (spontaneous loss of teeth); fracture of the jaw; salivary calculus (deposit); sarcoma of the alveolus.

ABNORMAL SHAPE AND STRUCTURE OF THE TEETH

The permanent teeth may be laminated due to intervals of arrested development during some acute disease in childhood. A similar condition may be present in the finger-nails.

Congenital Syphilis (*Hereditary Syphilis*).—*Characteristics.*—The characteristic teeth of this disease are those of the second set. Only the upper central incisors are to be relied upon for diagnostic purposes, although changes are frequently seen in other teeth. The typical teeth are the Hutchinson teeth; the upper central incisors are often rounded and peglike and have a single notch in the center of the edge, usually shallow and more or less crescentic in shape. The enamel is generally deficient in the center of the notch and the tooth here is apt to be discolored. These teeth are not properly placed, but incline either toward or away from each other. Hutchinson's teeth are good but not infallible evidence of the disease, and are not present in about 50 per cent of the cases. The teeth in other cases may be variously dwarfed and deformed; they often taper regularly from the base to the edge, giving rise to the term "screw-driver teeth." The first molars may be small and domed (Moon's teeth).

Chief Signs.—May be history of syphilis in the mother; may be bilateral interstitial keratitis, often with iritis or disseminated choroiditis; "saber-shaped" tibiae; may be swollen knees; may be deafness; may be "saddle-nose"; positive Wassermann.

Less Common Causes.—Stomatitis (pitted teeth); malnutrition (dentated or

furrowed); tuberculous adenitis (dentated or furrowed); gouty diathesis (ground and shortened).

THE JAW

(Referring to the Lower Jaw)

SYMPTOMS	PAGE
Pain in the Jaw	231
Inability to Open the Mouth (Lockjaw; Trismus)	233
Swellings of the Jaw	235
Deformities of the Jaw	236

PAIN IN THE JAW

Acute Alveolar Abscess (*Acute Apical Abscess; Acute Periodontitis; Acute Pericementitis*).—*Characteristics*.—There is throbbing pain referred to the jaw and tooth, often vaguely localized.

Chief Signs.—See page 226.

Acute Pulpitis.—*Characteristics*.—This condition causes toothache rather than pain in the jaw. There is heavy, boring pain and a feeling of internal pressure. A sudden pressure of food or toothpick, suction upon the pulp, or the contact of cold or hot, salt, sweet, or acid substances, may excite an attack of throbbing or lancinating pain.

Chief Signs.—See page 226.

Abscess of the Pulp.—*Characteristics*.—There is usually a history of discomfort or decided pain in the tooth and jaw, appearing at intervals, sometimes appearing and disappearing suddenly, the existing condition having been ushered in by dull, gnawing pain, which is usually not positively located. The pain grows in intensity and is relieved by applications of cold to the tooth.

Chief Signs.—See page 226.

Fracture of the Mandible.—*Characteristics*.—Great pain exists, depending upon the situation of the fracture, increased by passive movement of the parts.

Chief Signs.—History of direct violence (fracture of the body) or of indirect violence (fracture of the neck of the condyle); preternatural mobility; crepitus; swelling of the gum, possibly with bleeding from laceration; dribbling of saliva; deformity (shown by unevenness of the dental alignment or lateral displacement of the jaw); loss of function; swelling; may be suppuration when compound, necrosis, or sinus formation; x-ray.

Dislocation of the Jaw.—*Characteristics.*—Pain in the region of the temporo-maxillary joints may be severe, may be moderate, or may be absent.

Chief Signs.—See page 189.

Inferior Maxillary Neuralgia.—*Characteristics.*—Neuralgic pains in the lower jaw are due to neuralgia of this nerve, usually due to some focus of infection, rarely to neuritis *per se*.

Chief Signs.—Discovery of some focus of infection, as caries of the teeth, periodontitis, chronic pulpitis, sinusitis, etc.; relief after removal of the cause.

Trigeminal Neuralgia (*Tic Douloureux*).—*Characteristics.*—The inferior maxillary division may be chiefly affected or may be involved with the other branches. There are paroxysms of severe pain in the side of the face and tenderness over the mental foramen. Causes of reflex pain must be excluded.

Chief Signs.—See page 31.

Hypersensitive Dentine.—*Characteristics.*—Obstinate and persistent inferior maxillary neuralgia may owe its origin to so slight a cause as exposure at the neck of a lower tooth of a line of exposed dentine.

Chief Signs.—See page 225.

Mumps (*Epidemic Parotitis*).—*Characteristics.*—Pain usually precedes the swelling; it is usually referred to the posterior part of the jaw just below the ear, and is increased by pressure, by movements of the jaw, and sometimes by the presence of acid substances in the mouth.

Chief Signs.—See page 278.

Suppurative Parotitis.—*Characteristics.*—There is pain in the region of the parotid gland, situated as in mumps but of a more severe character.

Chief Signs.—See page 278.

Impacted Tooth.—*Characteristics.*—By far the most common dental impaction is that of the lower third molar. The most common symptom is trigeminal neuralgia of any degree. There may be heavy rheumatic pains about the side of the face and jaw or intractable and diffuse maxillary neuralgia. Impacted lower bicuspid may be the cause of great pain in the region of the mental foramen. Symptoms of maxillary periostitis—heavy, gnawing, and dull, throbbing pain, with more or less heat and engorgement of tissues—are noted as an accompaniment of impacted teeth. In many cases there may, however, be no symptoms whatever.

Chief Signs.—May be functional nervous and possibly mental disease; absence of a tooth from the dental arch with a history of no eruption; may be presence of a partly erupted tooth; may be a swelling of the arch; x-ray.

Arthritis Deformans (*Acute Form*).—*Characteristics.*—The temporomaxillary joint is often involved, and arthritis here is always suggestive of the disease. The joint is swollen, tender, and hot to the touch, and pain is a marked feature, being increased by movement of the jaw. There is rarely marked redness of the skin.

Chief Signs.—Acute onset; involvement of several joints simultaneously (cervical spine, hands, knees, especially); persistent fever; rapid pulse; may be repeated acute attacks; thickening in the joints; rapid muscular atrophy; absence of marked response to salicylates; resulting stiffness and deformity.

Gonorrheal Arthritis.—*Characteristics.*—This disease is peculiar in attacking certain joints which are rarely involved in rheumatic fever, as the temporomaxillary.

sternoclavicular, intervertebral, and sacro-iliac. There may be great pain and tenderness with swelling, in the region of the temporomaxillary joint.

Chief Signs.—Presence of a urethral discharge containing gonococci; may be one or several joints affected; usually only slight fever; complement-fixation test; may be ankylosis.

Salivary Calculus (*Parotid Sialolithiasis*).—*Characteristics.*—When causing partial obstruction of Stenson's duct, there are pain and swelling of both the duct and the parotid gland whenever the secretion is stimulated, but this subsides as the accumulation of saliva gradually forces its way out.

Chief Signs.—Palpation of the calculus through the cheek or probing of the duct; may be permanent thickening of the parotid gland; x-ray.

Necrosis of the Jaw.—*Characteristics.*—There is pain in the jaw accompanied by swelling of the face and gums.

Chief Signs.—History or evidence of causative lesion (injury, tooth suppuration, septic infection, phosphorus or mercury poisoning, syphilis, tuberculosis, etc.); fever; formation of an abscess, which may point in the mouth or externally on the face or neck; offensive discharge; palpation of dead bone with a probe; x-ray.

Sarcoma of the Jaw.—*Characteristics.*—Severe pain is often present, though it may be late, due to pressure exerted upon the mandibular nerve.

Chief Signs.—See page 201.

Acute Osteomyelitis and Periostitis of the Body of the Mandible.—*Characteristics.*—There is severe pain, tenderness, and swelling of the jaw.

Chief Signs.—See page 236.

Less Common Causes.—Carcinoma of the jaw; dental exostosis; actinomycosis; sphenopalatine neuralgia.

INABILITY TO OPEN THE MOUTH

(*Lockjaw; Trismus*)

Reflex Closure of the Jaws.—*Characteristics.*—An inflammatory process in the posterior part of the floor of the mouth, the cheeks, the pharynx, or of the external auditory canal may prevent the patient from opening the mouth on account of the pain it causes, but the limitation may be entirely involuntary with no pain, due to reflex irritation of an intra-oral lesion. Disease of a lower tooth (abscess, impaction) is the most common cause of reflex spasm of the muscles of mastication, but an upper tooth or an ulcer on the tongue may cause the same thing. Irritation from the third molars is a common source of such a spasm. The attacks may recur from time to time with varying intensity. Such spasms are not uncommon during dentition, especially of the wisdom teeth, the rigidity disappearing when the mucous membrane overlying the tooth is pierced.

Chief Signs.—Discovery of the reflex focus of irritation; relief after removal of the focus.

Temporomaxillary Ankylosis.—*Characteristics.*—There is mechanical inability to separate the jaws. Even when one joint is completely ankylosed, however, the jaws upon the sound side can be somewhat separated because of elasticity of the mandible.

Chief Signs.—History of temporomaxillary arthritis, fracture of the condyle, or intra-oral scars; retraction of the chin if occurring early in life; x-ray.

Tetanus.—*Characteristics.*—The patient's first complaint is of stiffness in the neck, or a feeling of tightness in the jaws, or difficulty in mastication. Gradually a tonic spasm of the muscles produces the condition of trismus or lockjaw, when the jaws are rigidly locked. The forcible contraction of the jaw may loosen or break the teeth.

Chief Signs.—History of a puncture wound (eight to twelve days previous); risus sardonicus; stiffness of the neck and back; may be retraction of the head; fever; convulsions (opisthotonos, orthotonos) with rigidity between the paroxysms; spasmodic contraction of the muscles of deglutition on attempts at swallowing; rapid shallow respirations; duration seven to ten days; culture from the wound and inoculation of mice.

Peritonsillar Abscess (Quinsy).—*Characteristics.*—The muscles of mastication are encroached upon by the abscess, hence the patient has the greatest difficulty in opening the mouth sufficiently wide to permit of an examination of the throat. In occasional instances the jaws may be tightly clamped together, simulating the lockjaw of tetanus.

Chief Signs.—See page 238.

Neurosis ("Hysterical" Closure of the Jaws).—*Characteristics.*—Attacks of inability to open the mouth are associated with some mental strain or worry, and while the attack lasts, which may be for weeks, the amount of opening varies.

Chief Signs.—Neurotic symptoms; elimination of reflex causes.

Carcinoma of the Mouth.—*Characteristics.*—By extension of the growth from its origin in the tongue, jaw, or cheek, the intermaxillary fold may be involved, resulting in spasm of the muscles of mastication.

Chief Signs.—See page 202.

Sarcoma of the Jaw.—*Characteristics.*—The mouth may be closed by spasm of the muscles of mastication.

Chief Signs.—See page 235.

"Hysteric" Tetanus.—*Characteristics.*—The jaws are rigidly set before a convulsion, and remain so between the paroxysms.

Chief Signs.—Onset with blindness and weakness in a person of neurotic qualities; convulsions, commencing with rigidity of the neck which creeps over the body, affecting the extremities last, the eyes being closed; persistent opisthotonos and intense rigidity between the convulsions, lasting for hours after the convulsions have ceased; loss of consciousness as the second convulsion comes on, and with every other convulsion; crying spells alternately with the convulsions; may be crossing of the feet and inversion of the toes during the convulsion.

Strychnin Poisoning.—*Characteristics.*—The jaw is the last part of the body to be affected; its muscles relax first, and even when, during a severe convulsion, it is set, it drops as soon as the latter ceases.

Chief Signs.—See page 45.

Less Common Causes.—Malingering; trichiniasis; dislocation of the jaw; Ludwig's angina; chorea; cerebrospinal meningitis; intestinal irritation; mumps; myositis ossificans; cerebral tumor; odontoma; parotid tumor; catalepsy; epilepsy;

facial neuralgia; tuberculous meningitis; spinal meningitis; uremia; tetany; actinomycosis.

SWELLINGS OF THE JAW

Alveolar Abscess.—*Characteristics.*—The swelling often becomes noticeable in the face, its situation depending on the situation of the affected tooth; thus, if an upper incisor is at fault, the swelling will appear first at the base of the nose; if the upper bicuspid or molar, farther back on the cheek; whereas, if one of the lower teeth is involved, the swelling will appear just below it in the region of the jaw. This regional swelling may, however, be slight, but the lymphatic glands at the angle of the jaw may cause prominent hard swelling in that region, no matter which tooth is affected, thus increasing the difficulty in locating the diseased tooth. A continued swelling is usually an indication of the decay of the root of the tooth or osteitis of the adjacent bone.

Chief Signs.—See page 226.

Osteoma of the Jaw.—*Characteristics.*—This hard tumor may attain a large size but grows very slowly. It may be pedunculated or attached by a broad base, and is felt to arise from the bone of the jaw. As it grows it may cause ulceration of the soft tissues, leaving the bone exposed.

Chief Signs.—See page 201.

Odontoma.—*Characteristics.*—When of considerable size this type of tumor may cause a thickening of the jaw-bone which can be felt or seen.

Chief Signs.—See page 201.

Dental Cyst.—*Characteristics.*—This may form a painless, smooth tumor of the mandible.

Chief Signs.—See page 202.

Sarcoma of the Jaw.—*Characteristics.*—The periosteal variety causes a hard, irregular, usually somewhat fusiform swelling. Certain of the sarcomata, which grow within the bone, cause a thinning and bulging rather than infiltration of its walls. In some varieties the growth is rapid from the first; while in others it may be slow or remain in abeyance for years, only to take on a rapid growth.

Chief Signs.—See page 201.

Myeloma.—*Characteristics.*—This tumor, closely related to sarcoma, may occur in the alveolar tissue of the bone and grow slowly, expanding the bone as it grows. Sometimes these tumors later perforate the bony capsule and invade the soft tissues.

Chief Signs.—See page 203.

Adamantinoma (Multilocular Cystic Tumor).—*Characteristics.*—This tumor is found most frequently in the lower jaw near the angle. It is felt and seen as a swelling of the bone which may attain a large size.

Chief Signs.—Pain at first; x-ray.

Carcinoma of the Jaw.—*Characteristics.*—The hard ulcerating type is most common on the lower jaw. This causes an induration and ulceration that are unmistakable.

Chief Signs.—See page 202.

Acromegaly.—*Characteristics.*—Both jaws increase greatly in size, especially the lower, which often projects below the upper jaw. The alveolar processes are widened and the teeth are often separated.

Chief Signs.—See page 123.

Actinomycosis.—*Characteristics.*—Of the jaw, actinomycosis causes permanent thickening, resembling sarcoma. It enters the interior of the bone through a tooth socket and leads to the production of granulation tissue; the bone is expanded and becomes carious, and a quantity of new bone is sometimes produced. The process is rather indolent and tends to form hard swellings situated most commonly near the angle of the jaw, in which case it does not commonly involve the bone.

Chief Signs.—Occurrence usually in farmers; presence of chronic sinuses which discharge the round “sulphur granules” containing the ray fungus.

Acute Osteomyelitis and Periostitis of the Body of the Mandible.—*Characteristics.*—There is usually swelling of the jaw when the periosteum is involved, with edema and redness of the skin, which appears glazed. In acute periostitis boggy swelling is prominent from the beginning and the skin pits on pressure. The abscess may break through the tissues and skin.

Chief Signs.—Acute onset with chill, fever, and rapid pulse; severe pain and tenderness in the jaw; prostration and stupor; leukocytosis; x-ray.

Necrosis of the Jaw.—*Characteristics.*—There is swelling, tenderness, and edema of the face and gums.

Chief Signs.—See page 233.

DEFORMITIES OF THE JAW

(See also “Swellings of the Jaw,” page 235.)

Protrusion of the Lower Jaw.—*Characteristics.*—The lower jaw may protrude a considerable distance beyond the upper (the “undershot” jaw), due to developmental abnormalities. When the protrusion is marked, especially if there are interdental spaces in the bicuspid region, the lingual inclination of the incisors is extreme.

Developmental Retraction of the Lower Jaw.—*Characteristics.*—If the lower jaw fails to develop in proportion to the upper, it is retracted and the chin recedes.

Ankylosis of the Jaw.—*Characteristics.*—If a unilateral ankylosis occurs before the jaws are fully formed there results a typical deformity. The chin is markedly retracted and is displaced toward the affected side, which appears full and rounded while the normal side is flattened. If the ankylosis is bilateral and has occurred before complete development of the jaws, the chin is simply retracted.

Forward Dislocation of the Jaw.—*Characteristics.*—In the bilateral form the mouth is open and fixed, and it cannot be closed, though it can be opened a little more. The lower jaw is advanced in front of the upper jaw and the face looks longer than natural, while the condyles are felt in front of the articular eminences. In the rare unilateral form the chin deviates toward the sound side, and the mouth is not so widely open nor the jaw so fixed.

Chief Signs.—See page 189.

Less Common Causes.—Malunion of fracture of the jaw; burns of the face and neck; malocclusion of the teeth.

THE PHARYNX OR THROAT

SYMPTOMS	PAGE
Pain in the Throat (Sore-Throat)	237
Tickling, Prickling, or Itching of the Throat (Including Dryness of the Pharynx)	240
Redness of the Pharynx or Tonsils	241
Swollen Tonsils (Including Neoplasms)	243
Ulceration of the Tonsils	245
White or Gray Patches on the Tonsils or Pharynx	245
Swellings of the Pharynx	247
Ulcer of the Pharynx	249
Mucous Accumulation in the Pharynx (Including Hawking and Spitting)	250
Anesthesia of the Pharynx and Palate (With Diminution or Loss of Reflex)	251
Paralysis of the Soft Palate and Uvula	252
Dysphagia with Pain (Painful Swallowing)	253
Dysphagia without Pain (Difficult Swallowing)	256
Abnormalities of the Uvula (Including Deviation and Paralysis)	259

PAIN IN THE THROAT

(Sore-Throat)

Acute Catarrhal Pharyngitis.—*Characteristics.*—Sudden and severe pain in the throat is usually present; and stiffness and aching of the muscles of the neck are complained of. Dysphagia or painful swallowing is a constant symptom.

Chief Signs.—Association with acute rhinitis or cold; onset with malaise and a slight rise of temperature; redness of the borders of the soft palate, pharynx, and uvula, with later edema and pain in the uvula; increased secretion in the throat; absence of involvement of the tonsils.

Acute Tonsillitis (*Acute Infectious, Follicular, or Lacunar Tonsillitis*).—*Characteristics.*—The febrile movement is accompanied by soreness upon swallowing, which as the disease progresses may become quite painful. The pain often shoots into the ears and is accompanied by dysphagia.

Chief Signs.—Onset with shivering or rigor; pains in the back and limbs; gen-

eral malaise; temperature 103° - 105° ; rapid pulse; furred tongue, heavy breath; constipation; examination, showing the tonsils swollen and red, with exudation in the crypts forming cheesy masses; cervical glands often tender and palpable; duration, two to seven days.

Peritonsillar Abscess (*Quinsy*).—*Characteristics*.—In severe cases there is marked pain, and the swelling becomes so great as to interfere with swallowing, respiration, and movement of the lower jaw (even “locked-jaw”).

Chief Signs.—Occurrence as complication of acute tonsillitis; usually unilateral; swelling, congestion, and edema of the palate and uvula; spontaneous or surgical opening of the abscess with the exit of pus.

Scarlet Fever (*Scarlatina*).—*Characteristics*.—In the majority of cases there is soreness of the throat in the beginning, especially in adults. The child may complain of this, and in some cases the throat symptoms may be entirely subjective. In many cases there is an erythematous blush covering the pharynx, tonsils, and fauces. In certain severe cases throat symptoms will predominate, and besides the pain there will be intense congestion in the throat, with membranous deposits, and rapid glandular swellings in the neck.

Chief Signs.—See page 766.

Chronic Pharyngitis (*Granular or Lacunar Pharyngitis; Clergyman's Sore-Throat*).—*Characteristics*.—The chief symptoms are soreness and dryness of the pharynx, which may be more noticeable in the morning. Frequently there is a sensation of foreign body in the throat producing a constant desire to hawk and expectorate.

Chief Signs.—History of attacks of acute pharyngeal inflammation; hoarseness of the voice after moderate use; may be irritable, hacking cough brought about by a tickling sensation in the throat; dislodgment of tenacious secretion; inspection, showing reddened or pale mucosa with enlarged blood-vessels extending across the posterior pharyngeal wall, which is covered with sticky secretions and enlarged lymph follicles.

Diphtheria.—*Characteristics*.—In pharyngeal and tonsillar diphtheria, particularly where there is membrane formation, the onset is occasionally accompanied by a little soreness of the throat, though it may be absent. Even in severe cases the onset is often gradual and insidious and only slight soreness of the throat may be present, the individual complaining only of slight difficulty on swallowing. The presence of a membrane will of course awaken suspicion and lead to immediate bacteriological investigation.

Chief Signs.—See page 262.

Syphilis of the Throat.—*Characteristics*.—In the primary stage (chancre) there is pain, more especially referred to the ear if the arch of the fauces is affected. In the secondary stage (mucous patch) there is in some cases a dull aching pain complained of with angina. In the tertiary stage (gumma) there is some pain, but it is not as severe as the lesions would appear to warrant.

Chief Signs.—See page 249.

Foreign Body in the Throat.—*Characteristics*.—Foreign bodies like pins and fish-bones occasionally get stuck in the mucosa of the tonsils or pharynx and cause irritation and pain greatly intensified on swallowing.

Chief Signs.—History of ingestion of a sharp substance, usually in eating, with

immediate discomfort, gagging, and sense of foreign body in the throat; inspection or palpation, showing presence of the foreign substance.

Edema of the Glottis (*Edematous Laryngitis*).—*Characteristics*.—There may be complaint of sore-throat, with dryness and fullness, and some dysphagia.

Chief Signs.—History of septic condition in the throat or some constitutional disease (diabetes, alcoholism, Bright's disease); hoarseness, hawking; gradually increasing dyspnea; examination with the laryngoscope (revealing intense engorgement and edema of the laryngeal opening and interior, and of the epiglottis).

Corrosive Poisoning.—*Characteristics*.—There is always intense pain in the throat, often rendered agonizing by the act of swallowing. If the patient recovers from the immediate effects, and ulcerations or erosions remain, these also will be painful.

Chief Signs.—See page 193.

Retropharyngeal Abscess.—*Characteristics*.—In adults there is pain similar to that experienced in an attack of quinsy, accompanied by difficult deglutition, partial loss of voice, and moderate rise of temperature. The pain and dysphagia increase until relieved by rupture of the abscess or by incision.

Chief Signs.—See page 247.

Tuberculous Ulcer of the Throat.—*Characteristics*.—An infiltration of the uvula may cause pain and a tickling cough. There is usually severe pain on swallowing, so much so that the secretions which are thickened and hard to dislodge are allowed to accumulate. Tuberculosis of the pharynx may begin in the soft palate, uvula, tonsils, or pharyngeal mucosa, and tends to spread.

Chief Signs.—See page 249.

Actinomycosis of the Pharynx and Tonsils.—*Characteristics*.—Pain is a variable quantity, and depends largely upon the seat and extent of the peculiar swelling. Usually there is a more or less continuous, heavy ache which is felt locally, and this at times may be eased, or intensified into acute distress.

Chief Signs.—See page 248.

Vincent's Angina (*Ulcerative Tonsillitis; Pseudomembranous Angina; Trench Mouth*).—*Characteristics*.—There is moderate or slight, but at other times violent pain in swallowing or talking.

Chief Signs.—Onset usually with symptoms of subacute or mild tonsillitis; may be malaise, headache, chilly sensations, slight fever (up to 102.5° F.); may be unilateral enlargement of the cervical glands, especially in children; presence of grayish white patches on the tonsils and other parts of the throat, surrounded by red areolæ; duration, several days or weeks; tendency to recurrence; microscopic examination of a stained smear (showing a fusiform bacillus twice as long as wide, pointed at the ends, in symbiosis with a spirillum forming a network around the bacilli).

Less Common Causes.—Uvulitis; acute infectious epiglottitis; phlegmonous tonsillitis (abscess within the tonsil; pain similar to quinsy); calculus of the tonsil; lacunar inflammation of the adenoids; neuralgia of the pharynx; neurosis; carcinoma of the pharynx; crico-arytenoid arthritis; poisoning by aconite, cantharides, corium; malignant neoplasm of the larynx (sharp lancinating pain in the ear and pharynx).

TICKLING, PRICKLING, OR ITCHING OF THE THROAT

(Including Dryness of the Pharynx)

Simple Acute Rhinitis (Coryza).—*Characteristics.*—At the onset there is a general sense of dryness of the mouth and throat.

Chief Signs.—See page 161.

Acute Catarrhal Pharyngitis.—*Characteristics.*—At the commencement there is a marked sensation of dryness in the pharynx associated with the soreness and pain during phonation and deglutition. The continued inflammation and swelling of the posterior pharyngeal wall gives rise to a sensation similar to that of a foreign body, and the patient attempts to relieve the dryness by frequent swallowing.

Chief Signs.—See page 237.

Chronic Lacunar Tonsillitis.—*Characteristics.*—Some patients have the sensation, lasting perhaps for only a minute or two, of a foreign body lodged in the tonsil. Sometimes the sensation is described as one of fullness, roughness, and irritability about the tonsils. Neurotic patients often are peculiarly susceptible to the irritation, even when there is retention only in one or two crypts.

Chief Signs.—See page 243.

Chronic Granular Pharyngitis (Clergyman's Sore-Throat).—*Characteristics.*—Among the chief symptoms is a sensation of tickling or burning in the pharynx, which is persistent; it is much worse upon lying down, and is relieved temporarily by hawking or by coughing. The efforts to relieve the tickling sensation and to clear the throat of the accumulation of thickened mucus not only produce hoarseness, or loss of voice, but irritate the inflamed mucosa.

Chief Signs.—See page 238.

Hay-Fever.—*Characteristics.*—The symptoms are those of an acute coryza, to which are added an itching in the region of the soft palate and the median palpebral commissures (inner canthi) of the eyes.

Chief Signs.—See page 163.

Scarlet Fever (Scarlatina).—*Characteristics.*—As early as the first day there may be complaint of dryness of the throat.

Chief Signs.—See page 766.

Elongation of the Uvula.—*Characteristics.*—One of the chief symptoms is a tickling sensation in the fauces.

Chief Signs.—See page 259.

Acute Uvulitis.—*Characteristics.*—A tickling, stinging, painful sensation in the throat (palate), aggravated by attempts at swallowing, is the first symptom observed. The irritation increases, evoking a persistent cough.

Chief Signs.—Uvula large, boggy, inflamed, edematous.

Acute Catarrhal Lingual Tonsillitis.—*Characteristics.*—There is a burning, pricking sensation in the throat.

Chief Signs.—May be moderate rise of temperature; painful deglutition; some tenderness to pressure in the region of the great cornu of the hyoid bone; inspection, showing slightly reddened pillars; laryngeal mirror, showing the lingual tonsillar mass greatly reddened and swollen.

Hypertrophy of the Lingual Tonsil.—*Characteristics.*—Symptoms are sometimes absent, though the sensation of a foreign body in the throat is usually complained of. There is a pricking sensation, as though a splinter had lodged in the fauces, or the patient complains of the sensation of a lump, a hair, or other foreign body in the throat. During meals the symptoms disappear.

Chief Signs.—Examination with the throat mirror, showing enlarged masses at the base of the tongue, on one or both sides, and of varying size.

Lingual Varix.—*Characteristics.*—There is a sensation of fullness in the throat and a tendency to cough. There is also a sensation of dryness, with an almost continuous effort to relieve by swallowing or coughing.

Chief Signs.—May be hemorrhage from rupture of a vessel; examination with the mirror, showing the dark blue veins running anteroposteriorly in fan shape from the base of the tongue.

Chronic Hyperplastic Rhinitis.—*Characteristics.*—An annoying symptom resulting from mouth-breathing is the extreme dryness of the mouth and throat.

Chief Signs.—See page 161.

Chronic Atrophic Pharyngitis.—*Characteristics.*—In the simple (non-fetid) variety the chief symptom is a disagreeable sensation of dryness in the back of the throat, accompanied by more or less burning or itching. These symptoms often become almost intolerable, requiring strenuous hawking in order to remove the thickened secretion. The subjective symptoms of the fetid variety are similar, added to which is the fetor and a greater tendency of the secretions to adhere to the posterior wall of the pharynx.

Chief Signs.—Usual association with atrophic rhinitis; large collections of secretions varying from light yellow to brown or even grayish or greenish crusts; changes in the voice and hoarseness; thin appearance of the pharyngeal mucosa; occurrence of the fetid type usually in young, anemic girls, and fetor oris with a tendency of the secretions to adhere to the posterior pharyngeal wall.

Tuberculosis of the Larynx.—*Characteristics.*—There may be a sense of prickling or dryness in the throat in conjunction with the cough, and hoarseness or aphonia.

Chief Signs.—See page 262.

Less Common Causes.—Tuberculosis of the pharynx (burning sensations); pharyngeal diphtheria (sensation of stiffness at the location of the membrane); angioneurotic edema in the pharynx; neurosis (nervous paresthesia of the pharynx); menopause; manic-depressive psychosis; benign neoplasms of the pharynx; benign neoplasms of the tonsil; tonsillar calculus; sexual hypochondriasis; hyperkeratosis of the tonsil (mycosis lepto-thrica); laryngeal arthritis.

REDNESS OF THE PHARYNX OR TONSILS

Acute Tonsillitis (*Acute Infectious, Follicular, or Lacunar Tonsillitis*).—*Characteristics.*—The pharynx and tonsils are red and painful; the tonsillar crypts contain white or yellowish masses and a pseudomembrane may be present.

Chief Signs.—See page 237.

Acute Catarrhal Pharyngitis.—*Characteristics.*—The mucous membrane of

the throat is congested, dry, and glistening. A sticky secretion may be visible clinging to the posterior pharyngeal wall.

Chief Signs.—See page 237.

Scarlet Fever (*Scarlatina*).—*Characteristics.*—The appearance of the throat varies from slight redness and swelling, to follicular inflammation of the tonsils or even membranous angina with great tenderness in the neck and swelling of the glands.

Chief Signs.—See page 766.

Measles (*Morbilli*).—*Characteristics.*—On the second and third day, that is, at the time of the appearance of Koplik's spots (on the cheek mucosa), the mucous membrane of the throat is hyperemic and dry. Differing from scarlet fever, measles affects the mucous membrane of the mouth rather than the throat.

Chief Signs.—See page 194.

German Measles (*Rötheln*).—*Characteristics.*—On the first day of the disease, in conjunction with the skin eruption, a macular, rose-red eruption appears on the throat as a constant symptom.

Chief Signs.—Occurrence frequently in adults as well as in children; epidemicity; mildness of invasion (chilliness, headache, pains in the back and legs, and coryza); slight fever (100°); eruption on the first day (usually), first on the face, then the chest, then spreading generally in twenty-four hours, the color of the eruption being brighter than in measles, consisting of round or oval, slightly raised, pinkish-red, usually discrete spots; duration one to three days.

Diphtheria.—*Characteristics.*—In a typical case there is at first redness of the fauces, and the child complains of slight difficulty in swallowing. While the membrane is first appearing (upon the tonsils), the pharyngeal mucous membrane is reddened, and the tonsils themselves are swollen.

Chief Signs.—See page 262.

Influenza (*La Grippe*).—*Characteristics.*—Acute pharyngitis and tonsillitis are commonly associated with influenza. The mucous membranes become intensely congested and the lymphoid tissue markedly swollen.

Chief Signs.—See page 86.

Peritonsillar Abscess (*Quinsy*).—*Characteristics.*—At the onset there is slight redness and swelling upon one side. As the disease progresses, the redness, swelling, tenderness, and pain increase in severity. The soft palate and uvula, as well as the pharyngeal mucous membrane, are red and edematous. The region of the tonsil is of a dusky red color.

Chief Signs.—See page 238.

Chronic Tonsillitis (*Hypertrophied Tonsils*).—*Characteristics.*—The pharynx and tonsils are chronically injected, the latter enlarged.

Chief Signs.—See page 243.

Chronic Pharyngitis (*Granular or Lacunar Pharyngitis; Clergyman's Sore-Throat*).—*Characteristics.*—The mucous membrane of the throat may be reddened, or it may be pale and fibrous-looking. The mucous membrane is relaxed, the vessels dilated, and it is covered with small granular bodies (lymph aggregations).

Chief Signs.—See page 238.

Retropharyngeal Abscess.—*Characteristics.*—The surface of the swelling is exceedingly tense and inflamed.

Chief Signs.—More frequent occurrence in young children; history of infectious disease or cervical caries (syphilitic or tuberculous); cough with “cri de canard” (duck sound); difficult and painful deglutition; examination (showing bulging of the posterior pharyngeal wall, largely unilateral, and fluctuation of the swelling); severe pain in adults similar to quinsy; dyspnea.

Vincent’s Angina (*Ulcerative Tonsillitis; Pseudomembranous Angina; Trench Mouth*).—**Characteristics.**—The mucous membrane is red, particularly at the location of the lesion, especially when the soft yellowish-green exudate is removed which leaves a bleeding surface.

Chief Signs.—See page 239.

Corrosive Poisoning.—**Characteristics.**—There is usually a general hyperemia of the mucous membrane of the throat, but in certain cases the stains of the corrosive substance may overlie it (white, for example, with phenol).

Chief Signs.—See page 253.

Less Common Causes.—Belladonna poisoning; cerebrospinal meningitis; coryza; erysipelas; gastritis; gout; iodism; Malta fever; mediastinal abscess; relapsing fever.

SWOLLEN TONSILS

(Including Neoplasms)

Acute Tonsillitis (*Acute Infectious, Follicular, or Lacunar Tonsillitis*).—**Characteristics.**—At the onset the tonsils are swollen and red. At a later period the tonsils are still more swollen and a creamy discharge is seen extruding from the mouths of one or more crypts.

Chief Signs.—See page 237.

Chronic Tonsillitis (*Hypertrophied Tonsils*).—**Characteristics.**—The tonsils are visibly enlarged and encroach to varying degrees upon the faucial opening. This is rarely marked enough to cause decided symptoms before the end of the second year, although occasionally in younger children enlargement sufficient to bring the two tonsils in contact may be seen. Enlarged tonsils may often be felt externally. As a rule, the tonsils become firmer and harder as time passes. They usually increase in size up to a certain point, and then remain nearly stationary until about puberty, when they may diminish considerably. During intercurrent attacks of inflammation, the swelling is much increased.

Chief Signs.—Frequent association with adenoids; mouth-breathing, disturbed sleep accompanied by snoring, and nasal voice—the patient in some cases talking as though he had food in his mouth; may be difficulty in swallowing; may be deafness and chest deformity; may be low fever and indefinite symptoms of illness.

Chronic Lacunar Tonsillitis.—**Characteristics.**—The tonsils are usually enlarged, and are often greater than they appear to be upon superficial examination, as they are covered by the plica triangularis and plica supratonsillaris; indeed, some of the largest tonsils are concealed from view. The plica tonsillaris is not an adhesion or inflammatory product, but an embryological structure. When the anterior and median surfaces of the tonsil are completely covered by an unusually large plica tonsillaris, the mouths of the crypts cannot be seen without a throat mirror or putting the patient “on the gag.”

Chief Signs.—Mild subjective symptoms (may be slight pain on swallowing saliva, but not food); may be neuralgic pains shooting into the ear; ephemeral sensation of foreign body; coughing up of caseous fetid masses; pus or caseous discharge on pressing the tonsils.

Peritonsillar Abscess (Quinsy).—*Characteristics.*—At the onset there is slight, unilateral swelling becoming greater as the disease progresses. If the abscess is in the tonsil, it is pushed toward the median line or even beyond it (phlegmonous tonsillitis). If the abscess is in the peritonsillar tissue, the swelling often appears to be in the region of the upper portion of the anterior pillar. The soft palate and uvula, as well as the pharyngeal mucosa, are edematous and red.

Chief Signs.—See page 238.

Measles (Morbilli).—*Characteristics.*—A catarrhal angina is part of the disease, and is as characteristic of measles as is the eruption upon the skin. There is acute swelling and congestion of the tonsils, uvula, palate, and pharynx. Much less frequently than in scarlet fever membranous patches are seen.

Chief Signs.—See page 194.

Papilloma of the Tonsil.—*Characteristics.*—Papilloma is more often multiple than single and presents the general outline of a bunch of grapes. If single and large it may be mistaken for a supernumerary tonsil. In some instances there may be one pedicle with many papillomata attached, whereas in others there may be many pedicles; the tumors vary in size from a pea to a walnut.

Chief Signs.—Absence of marked symptoms; may be a tickling sensation, and feeling of a foreign body in the faucial region, with a hacking cough; may be slight hyperemia around the attachment of the tumor; absence of pain.

Fibroma of the Tonsil.—*Characteristics.*—The tumor is firm, scantily supplied with blood-vessels, is usually pedunculated, though it may be sessile, and is usually limited to one tonsil. It may be mistaken for a supernumerary tonsil. It is more often single than multiple.

Chief Signs.—Occurrence more commonly in young than in middle or advanced life; very slow growth; usual absence of symptoms, except in large pedunculated tumors in which there may be mechanical symptoms; absence of discharge.

Carcinoma of the Tonsil.—*Characteristics.*—There is a nodular, ulcerated growth in the tonsil of a fleshy pink hue, which is often fungoid.

Chief Signs.—Occurrence usually after forty (average age fifty-two); usual presence of carcinoma of the tongue or pillars of the fauces; lancinating sharp pain; early ulceration with fetid breath and mucopurulent secretion; rapid growth with glandular enlargement; emaciation; biopsy.

Sarcoma of the Tonsil.—*Characteristics.*—There is present a smooth, round tumor, blue in color, and crossed by rather large arteries.

Chief Signs.—Occurrence at any age, but usually in young adults, most often after fifteen; usually primary; dull periodic pain; late ulceration with occasional hemorrhage.

Less Common Causes.—Amyloid disease; tonsillar calculus; dengue; erysipelas; mumps; acute pharyngitis; chronic follicular pharyngitis; scarlet fever; septicopyemia; curved styloid process; variola; lipoma; angioma; fibro-enchondroma; cyst of the tonsil; Hodgkin's disease.

ULCERATION OF THE TONSILS

Vincent's Angina (*Ulcerative Tonsillitis; Pseudomembranous Angina; Trench Mouth*).—*Characteristics*.—Removal of the granular or cheesy pseudomembrane which covers the patches exposes an ulcerative area or areas varying in size or depth, which bleed freely and are soon covered by a new membrane.

Chief Signs.—See page 239.

Diphtheria.—When the pseudomembrane is deeply attached, its removal is attended by some bleeding, uncovering an excoriated, superficially ulcerated area. If the membrane is superficially attached there will be no bleeding, and only a reddened surface will be exposed. Sloughing of the mucous membrane may occur when the blood-vessels become thrombosed (so-called gangrenous diphtheria), and under such circumstances a deeper ulcerated area may be visible.

Chief Signs.—See page 262.

Carcinoma of the Tonsil.—*Characteristics*.—Ulceration occurs early, having a fungoid appearance and a fleshy pink hue.

Chief Signs.—See page 244.

Syphilis of the Tonsil.—*Characteristics*.—Chancre or primary syphilis involves the tonsils (and pharynx) second in frequency only to the genitalia. There is an ugly superficial ulceration with indurated edges. The lesion is usually of short duration, though it may last into the period of the second stage (eruption). There is pain in the ear if the arch of the fauces is affected, and some deafness and tinnitus if the pharyngeal orifice of the eustachian tube is blocked. In the secondary stage, erythematous patches (mucous patches) in the throat have been described as ulcerations, though they are not true ulcers, but simple abrasions of the surface epithelium. The tertiary lesions (gummata) appear from three to twenty-five years after infection, and may be ulcerative, or even gangrenous and very destructive. Gumma is generally situated primarily near the periphery of the tonsil, rapidly invading neighboring parts. The edges are generally surrounded by an angry red zone.

Chief Signs.—History of infection; enlargement of the cervical lymphatics; may be cough or a tickling sensation in the throat; may be pain or dull aching; dysphagia; presence of other manifestations of syphilis; positive Wassermann.

Less Common Causes.—Tuberculosis of the pharynx; tonsillo-typhoid (Bouveret's ulcers); actinomycosis of the tonsils; corrosive poisoning; phlegmonous tonsillitis; sarcoma of the tonsils (ulcerates late); glanders; influenza; scarlet fever.

WHITE OR GRAY PATCHES ON THE TONSILS OR PHARYNX

Acute Tonsillitis (*Acute Infectious, Follicular, or Lacunar Tonsillitis*).—*Characteristics*.—At the onset no patches may be visible, but at a later period individual grayish-yellow patches are seen at the location of the crypts, separated by reddish tonsillar tissue (differing from diphtheria). The patches are not usually true membranous products but are secretions and débris which fill the crypts; but

occasionally a fibrinous exude is admixed with the débris, which gives it some of the characteristics of an inflammatory membrane. The protruding secretion and debris are easily wiped away, in contradistinction to the diphtheritic membrane, which is closely adherent to the epithelium. A culture will settle the matter where there is any doubt.

Chief Signs.—See page 237.

Diphtheria.—*Characteristics.*—The membrane first appears upon the tonsils, and it may be a little difficult to distinguish a patchy diphtheritic pellicle from the exudate of tonsillar crypts. By the third day the membrane has covered the tonsils, the pillars of the fauces, and perhaps the uvula, and it may extend to the posterior wall of the pharynx. At first grayish-white in color, it changes to a dirty gray, often to a yellow-white. It is firmly adherent usually, and when removed leaves a bleeding, slightly eroded surface, which is soon covered by fresh exudate.

Chief Signs.—See page 262.

Scarlet Fever (*Scarlatina*).—*Characteristics.*—During the period of invasion, in most severe cases there is a uniform erythematous blush covering the pharynx, tonsils and fauces, appearing on the hard palate as minute red points. The appearance of this is usually coincident with the rise in temperature. Occasionally, however, membranous patches may be seen upon the tonsils the first day, but generally not before the third or fourth day.

Chief Signs.—See page 766.

Vincent's Angina (*Ulcerative Tonsillitis; Pseudomembranous Angina; Trench Mouth*).—*Characteristics.*—A grayish-white patch or patches in the earlier stage are visible upon one tonsil, usually at its upper part, spreading later to the soft palate, the other tonsil, the pharynx, or the gums. The patches are surrounded by a red, inflamed areola, but separated from each other by healthy tissue. On removal of the membrane, which is granular and cheesy in consistency, an ulcerative area is exposed, which bleeds freely and is soon covered by a new membrane. The membrane may spread like diphtheria and as rapidly. Examination of a stained smear will quickly settle the diagnosis.

Chief Signs.—See page 239.

Phenol Poisoning.—*Characteristics.*—Carbolic acid when swallowed makes a white stain.

Chief Signs.—History of swallowing the poison; intense irritation; dysphagia, prostration; paralysis and death.

Mucous Patches.—*Characteristics.*—These appear as patches, usually not large, of a mother-of-pearl character. Upon close observation they are found to be, not ulcerations, but mere abrasions or elevations of the surface epithelium. They may soften and become superficially ulcerated. As a rule, however, they are about on a level with the surface of the mucous membrane, and are brought into greater prominence through congestion of the surrounding tissues. They present somewhat the appearance of the mucous membrane touched with nitrate of silver. Sometimes the patches become thickened like diphtheritic membrane. They remain unchanged for long periods unless modified by treatment, or occasionally they may ulcerate or spread.

Chief Signs.—History of primary infection four to twelve weeks previously; may be dull aching or at times severe pain and dysphagia; increased secretions;

swollen cervical glands; other manifestations of secondary syphilis; positive Wassermann; therapeutic test.

Less Common Causes.—Hydrochloric acid poisoning; nitrate of silver stains; pharyngomycosis; measles; whooping-cough; thrush; traumatism; agranulotic angina (pharyngeal ulcers, icterus, and leukopenia).

SWELLINGS OF THE PHARYNX

Adenoids.—*Characteristics.*—With the laryngeal mirror the epipharynx is found filled more or less with the soft adenoid mass. By the sense of touch, a gelatinous, wormlike mass may be felt in the epipharynx.

Chief Signs.—See page 160.

Retropharyngeal Abscess.—*Characteristics.*—On inspection of the throat there is usually seen a distinct bulging of the lateral wall of the pharynx, usually a little above the base of the tongue. The swelling may be so great as to crowd the uvula to one side and nearly fill the pharynx. It is rarely if ever in the median line. There is usually redness of the mucous membrane and edema of the uvula and of the adjacent parts. On digital examination the swelling is made out even better than by inspection. It may be situated so low down as not to be visible at all. In the early stage there may be felt only a localized induration or a somewhat diffuse swelling, but by the time the swelling is large enough to produce marked symptoms, fluctuation can generally be discovered.

Chief Signs.—Occurrence in healthy children, age six months to two or four years, also not uncommon after measles or specific fevers; occurrence also in older children or adults, especially with caries of the cervical vertebræ; onset with malaise and pyrexia, altered voice, cough, dyspnea, and dysphagia; retraction of the head, with chin forward, and mouth open; moderate fever in acute cases; usually unilateral enlargement of the cervical glands.

Tuberculosis of the Cervical Spine (*Cervical Caries; Cervical Spondylitis*). *Characteristics.*—In the middle and upper cervical region there may be an anterior prominence, which may be felt in the posterior wall of the pharynx. The neck may appear broadened or thickened in a nearly uniform way, and often the head seems to have settled downward upon the shoulders.

Chief Signs.—Occurrence usually between the third and the eighth year; may be a family history of tuberculosis, or presence of a latent focus, especially in the lymph glands; onset insidious; pains in the form of occipital neuralgia, sometimes referred to the front or side of the neck, frequent and severe, or only excited by movement; may be fixation spasm, especially slight torticollis; resistance to passive motion; steadying of the head with the hands; possible formation of retropharyngeal abscess; x-ray.

Gumma of the Pharynx.—*Characteristics.*—The posterior pharyngeal wall is a frequent site of gummatous infiltration and extensive ulceration. The ulcer is round or irregular, and is surrounded by a red areola. It has sharply defined edges, and its base shows feeble granulation tissue and exuding purulent secretion. Ulcers in the upper part of the pharynx are hidden from view unless discovered by a rhinoscopic examination. The posterior surface of the palate is a common place for a softening gumma. The destructive process is very rapid and perforation of

the palate is quickly established. Gummatous tumors appearing near the middle of the posterior pharyngeal wall show less tendency to soften, appearing as hard, firm, rounded tumors covered with mucous membrane. They may be quite large and present the appearance of fibroma or sarcoma. Another result of gummatous infiltration is seen in the development of contraction and scar tissue. A great and varied distortion of the pharynx is the result, and membranous folds are formed which cause distress. Adhesion of the soft palate to the posterior pharyngeal wall, often complete or with a small opening, is not uncommon.

Chief Signs.—History of syphilis; occurrence of syphilitic manifestations elsewhere; may be pain on swallowing, in the throat, or radiating to the ears; increased secretion, purulent or ropy; may be disturbance of phonation or regurgitation of fluids into the nose; may be enlargement of the cervical glands; may be difficult or painful deglutition; may be fetor oris (ozena); positive Wassermann.

Carcinoma of the Pharynx.—*Characteristics.*—An uneven mulberrylike growth is visible in the posterior pharynx or in the fauces, extending to the pharynx. It ulcerates, spreads rapidly, is irregular and fungating, infiltrates the tissues, bleeds easily, and is painful.

Chief Signs.—Occurrence after forty; difficulty in swallowing, speaking, breathing; sharp pains radiating to the ears, neck, and angle of the jaw; salivation; blood-tinged sputum; fetor oris; glandular enlargements in the upper neck behind the jaw; rapid cachexia; biopsy.

Sarcoma of the Pharynx.—*Characteristics.*—There is a rapidly growing, firm tumor starting occasionally on the posterior pharyngeal wall, but more commonly in the fauces (tonsils, soft palate). There is little or no infiltration beyond its margin, and glandular swellings are late in appearing. It is less common than carcinoma.

Chief Signs.—Occurrence usually in younger subjects than carcinoma; may be history of trauma; severe local ravages with constitutional manifestations if of the round-cell type (never pedunculated); slower growth, greater firmness, and occasional pedunculation if of the spindle-cell type, with greater local and less general malignancy than the round-cell type.

Actinomycosis of the Pharynx.—*Characteristics.*—One or more small rounded and reddish elevations appear on the posterior or lateral walls of the pharynx accompanied by the subjective annoyances of pharyngitis. The adjacent tissues become swollen and tumefied, and the evidences of an acute inflammation soon change to the more permanent engorgement and solidity of a chronic condition. The swelling is irregular but well outlined, firm to probe palpation, and not very sensitive, but slowly increases in size. Suppuration and the formation of angry-looking sinuses follow, from which a purulent matter containing small yellowish pellets or masses is discharged (ray fungus). The discharge is persistent, and the sinuses extend deeply and produce extensive destruction of tissue. The spread of the process does not, as a rule, occur, and it shows a tendency, if it occurs elsewhere, to do so as an isolated swelling rather than as a connected overgrowth from the original pharyngeal focus.

Chief Signs.—Occurrence usually in males, commonly connected with cattle; variable pain, but usually a more or less continuous, heavy ache which is felt locally, becoming at times intensified; fetor oris; gastric disturbance; appearance

of the disease elsewhere by metastases, especially in the lungs or alimentary tract; demonstration of *Actinomyces* in the discharge; inoculation into a guinea-pig.

Less Common Causes.—Fibroma; lipoma; angioma; dermoid cyst; teratoma; lymphosarcoma; retention cyst; chancre; aneurysm; congenital malformation of the pharynx; myxosarcoma; edema from stings.

ULCER OF THE PHARYNX

Chancre.—*Characteristics.*—Chancre is only rarely seen on the posterior or lateral walls of the pharynx, the tonsil and soft palate being more frequently involved. It presents the appearance of a superficial indurated ulcer, its base covered with a dirty-gray secretion.

Chief Signs.—May be pain in the pharynx or radiating into the ear; enlargement of the submaxillary glands; discovery of spirochetes in material from the margin of the ulcer by dark-field illumination or in a stained specimen (Levaditi stain); may be positive Wassermann; therapeutic test.

Mucous Patch.—*Characteristics.*—The mucous patch may become eroded and undergo superficial ulceration and have a tendency to spread peripherally. Mucous patches are of frequent occurrence in the mouth in secondary syphilis, but while they may invade the mucous membrane of the pharynx they are more commonly observed on the pillars of the palate, tonsils, and other parts of the buccal mucous membrane.

Chief Signs.—See page 246.

Gumma.—*Characteristics.*—The ulcer produced by the breaking down of a gumma in the pharynx is round or irregular, with sharply defined edges, surrounded by a red areola, showing feeble granulation-tissue in the base, and exuding a ropy purulent secretion.

Chief Signs.—See page 247.

Carcinoma.—*Characteristics.*—The cancerous ulcer of the pharynx is irregular in shape, fungating, rapidly spreading and infiltrating neighboring tissues and parts, and bleeds easily when touched.

Chief Signs.—See page 248.

Vincent's Angina.—*Characteristics.*—The ulcers which appear upon the tonsils, usually at the upper part, may spread to the pharynx.

Chief Signs.—See page 239.

Tuberculosis.—*Characteristics.*—Primary tuberculosis of the pharynx is rare and is probably always secondary to pulmonary or laryngeal tuberculosis. The pharyngeal mucosa presents a worm-eaten appearance, the ulcers being surrounded by an area of congestion. The ulcers are superficial and covered with a dirty grayish secretion. They bleed easily upon probe pressure. There is little or no induration except at the borders of old chronic ulcers.

Chief Signs.—Painful deglutition, the patient shrinking from swallowing very hot, very cold, or salty food, even the swallowing of saliva being painful; enlarged tender cervical glands; tenderness of the muscles of the neck; anxious expression, pallor, and emaciation; exclusion of syphilis (negative Wassermann), unless lues is associated; demonstration of primary lesion in the lungs.

Less Common Causes.—Typhoid fever; smallpox; diphtheria; actinomycosis; herpes simplex; herpes zoster; varicella.

MUCOUS ACCUMULATION IN THE PHARYNX

(Including Hawking and Spitting)

Acute Nasopharyngitis (*Acute Postnasal Catarrh*).—*Characteristics.*—After a short dry stage in which there is a dry, smarting feeling in the back part of the throat, with painful swallowing, the condition passes into one of hypersecretion. The discharge is at first whitish and mucous in character, but later becomes yellowish and of a mucopurulent consistency. It trickles down from behind the soft palate and is expectorated; some of it may be blown out through the anterior nares. Such a mucopurulent flow increases the tendency to gagging and nausea. The secretion is viscid, tenacious, and glairy.

Chief Signs.—History of exposure to cold and damp; may be mild febrile reaction (to 101° F.); general malaise and anorexia; gastro-intestinal disturbance (coated tongue, nausea, constipation); may be stiffness of the cervical muscles; may be nasal voice and irritative cough; may be more or less deafness.

Chronic Nasopharyngitis (*Chronic Postnasal Catarrh*).—*Characteristics.*—The most prominent symptom is the discharge of a profuse, viscid, yellowish secretion. It may adhere to the surface of the mucous membrane or flow down the posterior wall and be removed by a characteristic nasal sereatus or hawking. There is often the sensation of a pendent drop just behind the soft palate. During the day the natural activity of the pharyngeal muscles keeps the discharge from clogging up; but on waking in the morning the accumulation of the night hours is dislodged, causing gagging, nausea, and even vomiting. During damp weather and at sea level the discharge is increased.

Chief Signs.—History of repeated acute attacks, excess of smoking or alcohol; chronicity; presence of some condition causing nasal obstruction.

Nasal Obstruction.—*Characteristics.*—Any disease which causes nasal obstruction by interfering with proper aëration and drainage may bring about catarrhal inflammation of the nasopharynx with mucus accumulation in the throat and consequent hawking and spitting.

For causes of Nasal Obstruction, see page 161.

Adenoids.—*Characteristics.*—Epipharyngeal catarrh is an almost constant accompaniment of large adenoids. Indeed it is doubtful if adenoids of any considerable size are present without concomitant symptoms of chronic postnasal (epipharyngeal) catarrh, with increased secretion from the postnasal space, producing hawking and spitting.

Chief Signs.—See page 160.

Acute Pharyngitis.—*Characteristics.*—There is an irritative cough, with a constant desire to hawk and clear the throat. Viscid mucus is expectorated, sometimes in pellets and occasionally blood-streaked.

Chief Signs.—See page 237.

Chronic Pharyngitis (*Granular or Lacunar Pharyngitis; Clergyman's Sore-Throat*).—*Characteristics.*—There is complaint of dryness or sense of foreign body

in the throat with a constant desire to hawk or expectorate. These symptoms are aggravated in smokers. Cough may be present, though it is often absent; when present it is irritable and hacking in character. The secretions in the early stage of the disease are excessive, thick, and tenacious. At a later stage the glandular functions become impaired and the throat dry and glazed.

Chief Signs.—See page 238.

Chronic Alcoholism.—*Characteristics.*—There may be mucus accumulation in the pharynx, with morning cough, often ending in vomiting. The condition is usually dependent upon a chronic nasopharyngitis.

Chief Signs.—See page 37.

Enlarged Uvula.—*Characteristics.*—The constant coughing, when it exists, excites a secretion from the pharyngeal mucosa which is hawked out as gelatinous pellets occasionally tinged with blood.

Chief Signs.—General thickening or elongation of the organ which may be seen to rest upon the dorsum of the tongue on pharyngoscopic examination.

Acute Catarrhal Laryngitis.—*Characteristics.*—There is an almost constant desire to relieve the dryness and irritability and the accumulated secretions by hawking or coughing.

Chief Signs.—See page 261.

Chronic Atrophic Laryngitis (Ozena Laryngis).—*Characteristics.*—There is an irritating sensation of dryness in the larynx, which the patient endeavors to relieve by violent hawking efforts, which often induce strangling and even slight hemorrhage. The discomfort is aggravated by public speaking or singing.

Chief Signs.—Accumulation of inspissated crusts within the larynx; hoarseness or aphonia, especially in the morning, persisting until the crusts are expelled; may be fetid odor of the breath; diminished secretion; crusty formations in the pharynx, nose, and trachea; absence of pain except during inflammatory attacks.

Chronic Hypertrophic Rhinitis.—*Characteristics.*—Hawking and clearing the throat may be present.

Chief Signs.—See page 161.

Less Common Causes.—Pharyngomycosis; scarlet fever; measles; iodism; relapsing fever; glanders.

ANESTHESIA OF THE PHARYNX AND PALATE

(With Diminution or Loss of Reflex)

Neurosis ("Hysteria").—*Characteristics.*—There may be bilateral or unilateral anesthesia of the pharynx, which may be freely swabbed without producing the vomiting reflex.

Chief Signs.—See page 40.

Postdiphtheritic Paralysis.—*Characteristics.*—On examining the throat, the palate may hang lower than usual, and it and the pharynx may or may not be insensitive, but the palatal reflex is always diminished or lost. The constrictor of the pharynx being affected in severe cases, there is difficulty in deglutition, and choking.

Chief Signs.—Occurrence in the second or third week of convalescence from diphtheria; development of complete paralysis in two to seven weeks after its onset; nasal voice; regurgitation of liquids through the nose.

Bromism.—*Characteristics.*—The sense of touch in the back of the throat is obtunded in that the nausea reflex is absent, although some epicritic and protopathic sensibility may remain.

Chief Signs.—History of prolonged ingestion of bromids; skin rash; unsteadiness of gait; difficult cerebration.

General Paresis (*General Paralysis of the Insane*).—*Characteristics.*—A certain degree of insensitiveness of the pharynx may be present as a part of the general insensibility to peripheral stimuli found in the later stages of this disease.

Chief Signs.—See page 100.

Less Common Causes.—Chronic pulmonary tuberculosis; cerebral tumor; chorea; glossopharyngeal paralysis; bulbar paralysis; anemia; epilepsy.

PARALYSIS OF THE SOFT PALATE AND UVULA

Bilateral paralysis of the soft palate is to be suspected if there is regurgitation of fluids through the nose on attempting to swallow, and if there is failure to pronounce correctly certain sounds which require the approximation of the soft palate to the posterior pharyngeal wall, *e.g.*, the patient says “beng” for “beg.” If the paralysis is unilateral these symptoms are wanting. Inspection of the soft palate during the utterance of the long “ah” sound will show under normal circumstances that both sides of the palate arch upward. If the whole palate remains motionless during phonation there is bilateral paralysis; if but one side moves, it is unilateral.

Postdiphtheritic Paralysis.—*Characteristics.*—Of the local paralysis complicating diphtheria (toxic neuritis), the most common is that which affects the palate. This gives a nasal character to the voice, and owing to a return of liquids through the nose, causes a difficulty in swallowing. The palate is seen to be relaxed and motionless, and the sensation in it is much impaired. The affection may extend to the constrictors of the pharynx, and deglutition becomes embarrassed. Within two or three weeks or even a shorter time the paralysis disappears. In many cases the affection of the palate is only a part of a general neuritis.

Chief Signs.—See page 251.

Bulbar Paralysis (*Glosso-labio-laryngeal Paralysis*).—*Characteristics.*—Swallowing becomes difficult, owing partly to paralysis of the palatal muscles, and partly to involvement of the constrictors of the pharynx.

Chief Signs.—Gradual onset with involvement first of the lips and tongue (speech indistinct, with difficulty in pronouncing the lingual consonants, l, r, n, s, t, then later o, u, p, b, m); weakness in moving and protruding the tongue, with wasting, wrinkling of the mucous membrane, and fibrillary contractions; weakness of the orbicularis oris (lips), whistling being impossible, with some wasting; later, dribbling and unintelligible speech; duration two years.

Less Common Causes.—Tuberculous meningitis; cerebral tumor; vertebral caries.

DYSPHAGIA WITH PAIN*(Painful Swallowing)*

(See also "Dysphagia without Pain," page 256.)

Acute Catarrhal Pharyngitis.—Pain is usually present, causing distress in swallowing, and stiffness and aching of the muscles of the neck are complained of. Dysphagia or painful swallowing is a constant symptom.

Chief Signs.—See page 237.

Acute Tonsillitis.—*Characteristics.*—The febrile movement is accompanied by soreness upon swallowing, which, as the disease progresses, may become quite painful.

Chief Signs.—See page 237.

Peritonsillar Abscess (Quinsy).—*Characteristics.*—The muscles of mastication are encroached upon by the abscess, hence the patient has the greatest difficulty in opening the mouth sufficiently wide to permit of an examination of the throat. Swallowing becomes difficult and painful.

Chief Signs.—See page 238.

Chronic Lacunar Tonsillitis.—*Characteristics.*—The patient may complain of pain upon swallowing saliva, but not upon swallowing solid food.

Chief Signs.—See page 243.

Corrosive Poisoning.—*Characteristics.*—Immediately upon swallowing a corrosive substance a violent burning pain under the sternum is experienced, greatly aggravated by swallowing and followed by retching of pappy, hemorrhagic masses. Thirst, fever, and collapse ensue. Unless the condition proves rapidly fatal, the pain gradually diminishes after twenty-four hours. After a time deglutition becomes less painful, and the injury may undergo healing. It may be possible for a patient to swallow small pieces of solid food; but when scars form, strictures occur, and swallowing is again interfered with.

Chief Signs.—History of ingestion of a corrosive substance as lye or acid.

Foreign Body in the Esophagus.—*Characteristics.*—If the object swallowed is sharp or rough there will be pain on swallowing, otherwise there is no actual pain.

Chief Signs.—See page 257.

Burns of the Esophagus.—*Characteristics.*—There is pain on swallowing as the food passes over the injured mucosa and the muscle contracts.

Chief Signs.—History of swallowing steam or hot liquids; may be regurgitation of pieces of detached mucosa; may be subsequent cicatricial contraction with stricture.

Vincent's Angina (Ulcerative Tonsillitis; Trench Mouth).—*Characteristics.*—There is complaint of more or less pain on swallowing, which later may increase until there is great pain on swallowing or talking, accompanied by fetid breath, gastric disturbance, and enlargement with tenderness of the submaxillary and cervical glands.

Chief Signs.—See page 239.

Epidemic Parotitis (Mumps).—*Characteristics.*—There is pain and swelling in the parotid gland, below and in front of the ear, with great inconvenience in

taking food, for the patient is unable to open the mouth, and even speech and deglutition become difficult.

Chief Signs.—See page 278.

Carcinoma of the Tongue.—*Characteristics.*—In most cases there is difficulty in swallowing, masticating, and talking, accompanied by severe pain which is apt to radiate toward the ear and is certain to do so if the base of the tongue is involved.

Chief Signs.—See page 218.

Tuberculous Laryngitis.—*Characteristics.*—Of the symptoms, none is more aggravating than the dysphagia, which is met with particularly when the epiglottis is involved, and when the ulceration has extended to the pharynx. There is no more distressing or painful complication in phthisis. In cases where the epiglottis is much destroyed the dysphagia may be accompanied by distressing paroxysms of cough or suffocation.

Chief Signs.—See page 262.

Acute Esophagitis.—*Characteristics.*—Pain on deglutition is always present in severe inflammation of the esophagus. A dull pain beneath the sternum is also present.

Chief Signs.—History of trauma, infectious fever, or swallowing of irritants or foreign bodies; may be regurgitation of food with mucus, blood, or pus; development of a stricture following the swallowing of corrosives (lye, acids); pain on pressure over the sternum, thoracic vertebræ, or even on moving the body; esophagoscopy (revealing a swollen and relaxed mucous membrane with injected vessels).

Chronic Esophagitis.—*Characteristics.*—In pronounced cases pain and pressure attend the act of swallowing. In other cases the affection causes only slight pain. The principal symptoms are referable to the upper third of the esophagus, the walls here being in contact with each other. Often when there is great sensitiveness, the food is brought up, perhaps with an admixture of blood. Liquid food can always be better swallowed than solid.

Chief Signs.—Occurrence most frequently in elderly men; may be history of acute esophagitis, misuse of alcohol and tobacco, presence of cardiopulmonary disease, or chronic gastric disease with vomiting of irritating material; chronicity; absence of symptoms of cancer; esophagoscopy (revealing whitish cloudiness, or swelling or redness of the mucous membrane, with the presence of a tough mucous secretion).

Acute Infectious Epiglottitis.—*Characteristics.*—There is painful deglutition.

Chief Signs.—Sudden onset; fever; stiff, swollen tongue; dyspnea, especially upon lying down; anterior surface of the epiglottis red and swollen.

Syphilis of the Pharynx (Gumma).—*Characteristics.*—Pharyngeal gummata are usually found upon the posterior wall of the pharynx, and the swellings, which vary in size, give rise to pain, altered voice, and sometimes to difficulty in deglutition.

Chief Signs.—See page 247.

Scarlet Fever (Scarlatina).—*Characteristics.*—In the majority of cases there is sore-throat accompanying the invasion, which produces a varying amount of dysphagia.

Chief Signs.—See page 766.

Chronic Superficial Glossitis.—*Characteristics.*—The pains are strikingly severe, considering the slight anatomic changes—so much so that ingestion of food due to painful mastication and deglutition may be restricted to the utmost.

Chief Signs.—See page 208.

Acute Catarrhal Laryngitis.—*Characteristics.*—Dysphagia may be complained of, and is associated with hoarseness and a hacking cough.

Chief Signs.—See page 261.

Carcinoma of the Larynx.—*Characteristics.*—In extrinsic malignancies, *i.e.*, those originating at the entrance of the larynx, painful deglutition may be a prominent and early symptom. Difficult deglutition is a late symptom in intrinsic malignancy. In both varieties the dysphagia is apt to be accompanied by aphonia, dyspnea, and pain.

Chief Signs.—See page 264.

Carcinoma of the Pharynx.—*Characteristics.*—Among the later symptoms are dysphagia, associated with pain, dyspnea, fetid breath, cachexia, lymph gland enlargement, and hemorrhage.

Chief Signs.—See page 248.

Abscess of the Tongue.—*Characteristics.*—The swelling of the affected part, which is usually the dorsal surface of the tongue toward the base, interferes with swallowing and speaking.

Chief Signs.—See page 209.

Retropharyngeal Abscess.—*Characteristics.*—As the disease progresses, deglutition becomes difficult and painful.

Chief Signs.—See page 247.

Carcinoma of the Esophagus.—*Characteristics.*—The presence of much pain suggests spreading of the carcinoma and metastatic formations which exert pressure upon neighboring nerve trunks.

Chief Signs.—See page 256.

Peptic Ulcer of the Esophagus.—*Characteristics.*—The chief symptom of this ulcer is pain on swallowing, which is usually felt at the level of the xyphoid cartilage. Solid food usually gives greater pain than liquid. There may also be pain after eating.

Chief Signs.—Tendency to pyrosis, sour eructation, and vomiting; may be pain in the stomach of a severe character; may be hematemesis and blood in the stools; loss of flesh from inability to eat; pain in the esophagus on passing the stomach tube; esophagocopy.

Hydrophobia (Rabies).—*Characteristics.*—During the premonitory stage the first symptoms of difficulty in swallowing are experienced. During the next stage, that of excitement, spasms appear when efforts to swallow are made, which are exceedingly painful and affect the muscles of the larynx and throat. These spasms make the patient dread even the sight of water to swallow, to which circumstance the disease owes its name.

Chief Signs.—Usually history of having been bitten by a rabid animal; incubation period forty to fifty days; irritation of the original wound; slight fever; irritability, terror, and spasms; abundant viscid saliva; may be mania; examination of the suspected animal (Negri bodies in the cornu ammonis of the brain).

Acute Lingual Tonsillitis.—*Characteristics.*—There is painful deglutition accompanied by burning and pricking sensations in the throat.

Chief Signs.—See page 240.

Less Common Causes.—Ludwig's angina; temporomaxillary arthritis; atlanto-axial disease; botulism; glandular fever; pemphigus of the throat; ptomaine poisoning; tetanus; trichiniasis; variola; varicella; exfoliative esophagitis; fibrinous esophagitis; phlegmonous esophagitis; herpes zoster of the pharynx; gangrenous ulcer of the pharynx; decubitus ulcer of the pharynx; tuberculous ulcer of the pharynx; syphilitic ulcer of the pharynx; animal parasites in the esophagus (leeches, flies, trichina); traumatic perforation of the esophagus (stabs, gunshot wounds); acute infectious epiglottitis; acute infectious perichondritis of the larynx; membranous laryngitis (pseudomembranous croup); traumatic laryngitis; foreign bodies in the larynx; calculus of the tonsil; acute suppurative parotitis; acute diffuse glossitis (phlegmon of the tongue); traumatic ulcer of the tongue; furrowed tongue; angina pectoris; dislocation of the jaw; fracture of the lower jaw; acute phlegmonous lingual tonsillitis.

DYSPHAGIA WITHOUT PAIN

(*Difficult Swallowing*)

(See also "Dysphagia with Pain," page 253.)

Carcinoma of the Esophagus.—*Characteristics.*—The earliest symptom is dysphagia, which is progressive and may become extreme, so that the patient emaciates rapidly. The first evidence may be difficulty in swallowing a bolus of food eaten hastily. First there is inability to swallow solid food, then soft food, and finally liquids. Regurgitation may take place at once after swallowing; or if the cancer is situated near the stomach, it may be deferred for ten or fifteen minutes, or even longer if the tube is much dilated. The rejected materials may be mixed with blood and may contain cancerous fragments. The passage of food over the cancerous area may give rise to pain, or pain in the esophagus may be persistent, and in some cases very great, though pain is not a common symptom.

Chief Signs.—Occurrence usually after fifty; rapid emaciation; may be enlarged lymph glands; fluoroscopy with the opaque meal; x-ray; esophagoscopy.

Bulbar Paralysis (*Glosso-labio-laryngeal Paralysis*).—*Characteristics.*—In advanced cases there is interference with swallowing and coughing. The pharyngeal muscles and those of the tongue do not act in concert, and liquid food regurgitates through the nose. An apparent increase in saliva, an annoying symptom, is largely dependent upon inability to swallow.

Chief Signs.—See page 252.

Cardiospasm (*Spasmodic Stricture of the Esophagus; Esophagismus*).—*Characteristics.*—Cardiospasm, as a rule, starts suddenly during eating, and may pass off rapidly (acute cardiospasm); or it may persist for a long time (chronic cardiospasm). When the condition becomes chronic, patients while eating experience a sensation of pressure in the chest, which at times assumes the character of spastic pains radiating toward the bowels. The morsel of food is felt sticking in the

esophagus, only to pass after a time into the stomach; or retching may cause its regurgitation into the mouth.

Chief Signs.—Absence of history of organic stricture (swallowing corrosives, tumor, aneurysm); may be concomitant neurotic manifestations (globus hystericus); transient attacks at first, becoming more persistent; regurgitation of food and liquids (especially nocturnal); relaxation of the spasm by a bougie; fluoroscopy with an opaque meal (revealing ephemeral stricture at the cardia, with perhaps dilatation of the esophagus above); relief by antispasmodic medication.

Cicatricial Stricture of the Esophagus.—*Characteristics.*—The chief symptom is difficulty in swallowing, the degree of difficulty depending upon the degree of the stricture, though in nervous patients an accompanying esophageal spasm may alter this point. The degree of dysphagia is not constant at all times.

Chief Signs.—History of swallowing corrosives, or of some infectious disease, possibly years previous; sense of fullness in the chest; may be regurgitation; may be dyspnea; fluoroscopy.

Neurosis.—*Characteristics.*—Difficulty in swallowing due to paralysis of the tongue or pharynx is an occasional manifestation of the psychoneuroses. In the “globus hystericus” of “hysteria,” which is often a concomitant symptom of the minor convulsive attack, there is a sensation of constriction in the neck or of a ball rising in the throat.

Chief Signs.—See page 40.

Elongation of the Uvula.—*Characteristics.*—In extreme cases there may be considerable interference with deglutition. Where the elongation amounts to two inches or more the patient literally swallows the uvula.

Chief Signs.—See page 259.

Cleft-Palate.—*Characteristics.*—Cleft-palate interferes with swallowing, sucking, mastication, and articulation; and in severe cases food passes into the nose and excites inflammation.

Chief Signs.—See page 205.

Diphtheritic Paralysis of the Palate.—*Characteristics.*—The palate is most frequently involved in postdiphtheritic paralysis, occurring in the second or third week of convalescence. One of the earliest signs is a difficulty of swallowing as shown by regurgitation of food through the nose. On examination the palate is relaxed, motionless, insensitive, and the reflex is absent.

Chief Signs.—See page 251.

Foreign Body in the Esophagus.—*Characteristics.*—There is a sense of something sticking in the throat, and if the object be rough or sharp there may be some pain on swallowing.

Chief Signs.—History of swallowing a foreign substance (such as artificial teeth, coins, buttons, fragments of bone, toys); x-ray; esophagoscopy.

Edema of the Glottis (*Edematous Laryngitis*).—*Characteristics.*—As soon as the epiglottis becomes congested, dysphagia appears, accompanied by dyspnea as edema develops.

Chief Signs.—See page 239.

Pulsion Diverticulum of the Esophagus (*Simple Diverticulum*).—*Characteristics.*—The symptoms develop slowly as the lesion progresses, commencing with slight difficulty in swallowing and a slight pressure sensation in eating. Fre-

quently there is also eructation after meals and vomiting of small quantities of the ingested food. As the diverticulum increases in size, the symptoms become more pronounced. The food glides into the diverticulum, which, according to its fullness, presses against the lumen of the esophagus, allowing but a very small portion of the food to reach the stomach. The diverticulum is very rapidly filled, causing the food to accumulate in the pharynx, whence it is brought up and vomited in a short time. Some patients are able to press the food down with the finger to the side of the neck.

Chief Signs.—May be history of trauma; slow development; occurrence between fifty and sixty years of age; passage of a sound into the filled diverticulum; esophagoscopy; fluoroscopy with the opaque meal; x-ray.

Aneurysm of the Thoracic Aorta.—*Characteristics.*—Difficulty in swallowing and the feeling of a lump in the throat may result from pressure upon the esophagus, especially when the aneurysm is adherent to it or is infiltrating its walls. This is, of course, characteristic of aneurysms of the descending portions of the arch and to a less degree of the descending thoracic aorta. It is not at all a rare symptom, and yet is by no means as common as might be expected even when the aneurysm is large.

Chief Signs.—See page 541.

Mediastinal Tumor.—*Characteristics.*—There may be gradually developing dysphagia from esophageal compression.

Chief Signs.—See page 264.

Pericarditis with Effusion.—*Characteristics.*—Dysphagia may be a marked symptom with large effusions, which usually produce simultaneously other symptoms of compression, particularly distention of the veins of the neck, and irritative tracheobronchial cough.

Chief Signs.—See page 362.

Syphilis of the Larynx (Tertiary).—*Characteristics.*—Whenever the epiglottis is the seat of a gumma there is a sensation as of a lump in the throat of which the patient is constantly conscious, especially during the act of swallowing. If the lesion is located on the posterior aspect of the larynx adjacent to the mouth of the esophagus, dysphagia is usually a marked symptom.

Chief Signs.—See page 263.

Transverse Myelitis.—*Characteristics.*—Where transverse myelitis involves the cervical region there may sometimes be attacks of dysphagia. There may also be attacks of dyspnea or syncope. Vomiting, hiccough, and slow pulse (20–30) are apt to occur in this type.

Chief Signs.—See page 620.

Myasthenia Gravis.—*Characteristics.*—Weakness of the muscles of mastication is common combined with bulbar symptoms, as shown by difficulty in swallowing, regurgitation of fluids through the nose, and a nasal speech.

Chief Signs.—See page 63.

Less Common Causes.—Diphtheria of the esophagus; congenital stricture of the esophagus; sarcoma of the esophagus; actinomycosis of the esophagus; thrush of the esophagus; ascarides in the esophagus; benign neoplasm of the esophagus (papilloma, fibroma, lipoma, myxoma, dermoid cyst); traction diverticula; esophagomalacia; tuberculosis of the vertebræ; tuberculosis of the tracheobronchial lymph-

nodes; leukemia; Hodgkin's disease; lymphosarcoma of the thoracic glands; intra-thoracic goiter; enlargement of the thymus; diphtheria; macroglossia; general paresis; chorea; tonsillar cyst; crico-arytenoid paralysis; paroxysmal hemoglobinuria; lead poisoning; enlarged lingual tonsil; Mikulicz's disease; mitral stenosis; pachydermia laryngis; aneurysm of the subclavian or carotid artery; lupus of the pharynx; "hysterical" dysphagia.

ABNORMALITIES OF THE UVULA

(Including Deviation and Paralysis)

Bifid Uvula.—*Characteristics.*—This is the chief congenital malformation of the uvula, wherein the median elongation is divided into two portions usually of equal size. The extent of the bifurcation varies, but may be sufficiently deep to give the appearance of double uvula.

Rudimentary Uvula.—*Characteristics.*—In this malformation, the uvula is only slightly developed and occasionally is absent altogether.

Elongated Uvula.—*Characteristics.*—The condition may be congenital with redundancy of tissue, or may be due to relaxation.

Chief Signs.—Tickling sensation in the fauces; cough; may be interference with deglutition; pharyngoscopy.

Acute Uvulitis.—*Characteristics.*—As the swelling and edema increase, owing to the infiltration of serous exudate into the soft-yielding tissues, the uvula tip becomes bulbous, elongated, and impinges upon the base of the tongue and epiglottis, evoking a persistent cough.

Chief Signs.—See page 240.

Facial Paralysis.—*Characteristics.*—The palate is partially paralyzed on the same side and the uvula deviates toward the sound side.

Chief Signs.—See page 47.

Bulbar Paralysis (*Glosso-labio-laryngeal Paralysis*).—*Characteristics.*—Pharyngeal, including palatal (and uvular), paralysis may be the first symptom, though the tongue is usually the first organ affected. The paralysis, at first slight, gradually increases in severity.

Chief Signs.—See page 252.

Less Common Causes.—Gumma of the uvula.

THE LARYNX

SYMPTOMS	PAGE
Pain in the Larynx (Including Other Disagreeable Sensations)	260
Hoarseness or Aphonia	261
Abnormalities Noted by Laryngoscopy	265

PAIN IN THE LARYNX*(Including Other Disagreeable Sensations)*

Some increase in sensibility of the larynx is common even among healthy individuals. The milder symptoms consist of burning, pricking, dryness, constriction, and rawness in the larynx.

Acute Catarrhal Laryngitis (*Acute Congestive Laryngitis*).—*Characteristics*.—At the commencement there is a distinct sensation of burning, itching, or tickling within the larynx, which is aggravated during the second stage, phonation often becoming painful. These symptoms are irritated by cold air.

Chief Signs.—See page 261.

Edema of the Glottis (*Edematous Laryngitis*).—*Characteristics*.—When the disease is severe there is intense pain and discomfort in the larynx, partially from inflammation and partially from pressure; in mild cases there is little or no pain.

Chief Signs.—See page 263.

Chronic Hypertrophic Laryngitis.—*Characteristics*.—Forced speaking becomes difficult and often impossible, and any prolonged vocal effort will give rise to a sensation of tickling and often strangling cough, to relieve which speakers resort to the frequent drinking of water. In singers the voice can never be depended upon; it breaks or tires quickly, and vocal efforts require forced muscular strain and produce more or less pain within the larynx. There is a sensation of dryness and irritation in the larynx, and an almost constant desire to relieve the dryness, the irritability, and the accumulated secretions by hawking or coughing.

Chief Signs.—See page 261.

Chronic Atrophic Laryngitis (*Laryngitis Sicca*).—*Characteristics*.—There is an irritating sensation of dryness in the larynx, which the patient endeavors to relieve by violent hawking efforts, which often induce strangling and slight hemorrhage. The discomfort is aggravated by public speaking or singing. Pain is absent except during attacks of acute inflammation.

Chief Signs.—See page 264.

Chronic Perichondritis and Chondritis.—*Characteristics*.—The symptoms are ushered in by gradually increasing swelling, pain, and tenderness about the larynx, attended with dyspnea. In case abscess forms there will be no relief until the cavity has been evacuated.

Chief Signs.—History of trauma to the larynx or tuberculosis, syphilis, or cancer of the larynx; pain and dyspnea; aphonia; may be dysphagia; laryngoscopy under cocain anesthesia (deep-seated swelling, the probe revealing exposed cartilage; swollen, reddened mucous membrane at the site of an abscess).

Tuberculous Laryngitis.—*Characteristics*.—Pain is present upon phonation and deglutition, and may be a marked symptom; but deglutition is not painful so long as the ulceration is entirely intrinsic.

Chief Signs.—See page 262.

Carcinoma of the Larynx.—*Characteristics.*—The efforts of coughing and hawking which are made after ulceration has occurred produce more or less pain, which is lancinating in character and radiates to the pharynx and ear. The painful stage is usually preceded by hoarseness which has existed for months. Dysphagia is a late symptom.

Chief Signs.—See page 264.

Foreign Body in the Larynx.—*Characteristics.*—Pain in the laryngeal region may be present and is sometimes referred to the ears.

Chief Signs.—See page 264.

Neurosis ("Hysteria").—*Characteristics.*—There may be perverted sensations in the larynx. Also, persons who by occupation are obliged to use their voices much are frequently the sufferers from a morbid sensibility of the larynx which causes them to suspect the presence of a foreign body in the throat. More frequently the patient is apprehensive or even "hysterical," and complains of a lump in the throat, violent pain, or spasm.

Chief Signs.—Neurotic symptoms; apprehension; absence of laryngeal pathology; cure by psychogenic methods.

Acute Phlegmonous Laryngitis.—*Characteristics.*—Pain and soreness in the larynx are usually complained of.

Chief Signs.—See page 265.

Less Common Causes.—Laryngeal arthritis; laryngeal stenosis; sarcoma of the larynx; neuralgia of the larynx (true neuralgia, or accompanying malaria, gout, rheumatism, pressure from some tumor or swelling, epipharyngitis, and angina of the pharynx); aphonia spastica; laryngeal vertigo or epilepsy (prodrome of tickling in the larynx); acute infectious perichondritis; syphilitic laryngitis; hydrophobia (painful spasms); tabes dorsalis (lightning pains).

HOARSENESS OR APHONIA

Hoarseness and aphonia are due usually to disease of the larynx itself or to disease of or pressure on the recurrent laryngeal nerve or nerves. Excessive use of the voice and strong emotion (neurosis) may give rise also to these symptoms.

Acute Catarrhal Laryngitis.—*Characteristics.*—At first the voice is simply husky, but soon, if the attack is severe enough, phonation becomes painful, and finally the voice may be completely lost.

Chief Signs.—History of exposure to cold or overuse of the voice, exposure to irritant gases, or symptoms of acute specific fevers (measles, influenza); tickling in the larynx irritated by cold air; may be dry cough or slight expectoration; may be dysphagia and pain over the larynx; laryngoscopy (swollen mucous membrane, particularly the aryepiglottidean folds; lusterless, swollen, reddened vocal cords with impaired mobility).

Chronic Hypertrophic Laryngitis.—*Characteristics.*—The voice is usually hoarse and rough, and in severe cases may be almost lost. Hoarseness is most marked during the early morning hours, but the voice usually becomes more clear as the day progresses, unless it is overused. Forced speaking, however, becomes

difficult and often impossible. There is a "tired voice" and "breaks" during phonation. In severe cases there may be aphonia for considerable periods (chronic discrete subglottic laryngitis).

Chief Signs.—Usual history of repeated acute attacks; absent or very slight pain; unpleasant sense of tickling in the larynx causing a frequent desire to cough; laryngoscopy (swelling of the membrane, but much less redness than in the acute form, thickened vocal cords with mucus on the surface, slight hyperemia and weakness of the adductor muscles); may be granular pharyngitis.

Tuberculous Laryngitis.—*Characteristics.*—The first indication is slight huskiness of the voice, which finally deepens to hoarseness, and in advanced stages there may be complete loss of the voice (aphonia). There is something very suggestive in the early hoarseness of the laryngitis to those who are familiar with it, and the attention may be drawn to the lungs simply by the quality of the voice. The voice is weak and softly hoarse, or aphonic.

Chief Signs.—Gradually developing irritative cough which at first is not troublesome but becomes husky and ineffectual when the ulceration is extensive; aggravating dysphagia, when the epiglottis is involved, which later may become agonizing, leading to paroxysms of cough and even of suffocation; laryngoscopy (mucous membrane at first pale, thickened and infiltrated, later ulcerated and "worm-eaten," "pyriform arytenoids" or "turban-shaped" epiglottis); pallor of the palate; usually association with well-marked pulmonary disease; demonstration of tubercle bacilli in an ulcer smear.

Laryngeal Diphtheria (Membranous Croup).—*Characteristics.*—The stage of invasion is characterized by a simple angina becoming suddenly complicated with hoarseness, and a cough typical of laryngeal inflammation. Soon a pseudomembrane develops, the cough becomes dry, short, hoarse, and paroxysmal, and aphonia, more or less complete, develops.

Chief Signs.—Occurrence in children (commonest about three years); presence of a faucial membrane and enlarged cervical glands; mild fever; marked prostration; harsh cough and increasing inspiratory stridor; asphyxia and cyanosis; presence of Klebs-Löffler bacilli in the throat culture.

Spasmodic Laryngitis (Spasmodic Croup).—The attack may be preceded for several hours by slight hoarseness, or by a nasal discharge. Slight hoarseness persists for several days, but otherwise the child is apparently well.

Chief Signs.—Occurrence usually from six months to three years; hollow, barking cough in the evening, the child awaking about midnight with marked inspiratory dyspnea and a loud stridor, lasting three or four hours; normal temperature or very slight fever; repetition on two successive nights; may be recurrence every few weeks during the cold season.

Simple Acute Laryngitis in Children.—*Characteristics.*—The subjective symptoms are somewhat different from those in adults on account of greater swelling. There may be severe dyspnea which occurs in paroxysms at night. These spasmodic attacks are preceded by a day or two of hoarseness and a croupy cough; there may even be loss of the voice. This disease is clinically somewhat similar to the one above, except that it is more severe and the inflammatory character more marked.

Chief Signs.—Occurrence between one and five years, usually in winter; hoarse,

dry, barking cough, worse at night; paroxysmal inspiratory dyspnea (stridulous breathing) at night; fever; duration about three days.

Syphilitic Laryngitis.—*Characteristics.*—In secondary syphilis the voice may become rough and harsh, with partial loss of the voice resembling that seen in ordinary catarrhal laryngitis, these symptoms being accompanied by an irritative or tickling cough and “clearing of the throat.” In tertiary syphilis of the larynx there is permanent hoarseness and incomplete aphonia. Permanent loss of voice may result from the scarring and adhesions. In contrast to the laryngeal symptoms of tuberculosis, the voice changes in syphilis develop painlessly.

Chief Signs.—Laryngoscopic examination (hyperemia of the larynx in secondary syphilis, sometimes with symmetric ulcerations and sometimes warts or condylomata; gummata with deep ulceration and necrosis of the cartilages in the tertiary stage, sometimes cicatricial stenosis from the healing of ulcers); other manifestations of syphilis, congenital or acquired (secondary or tertiary); positive Wassermann; improvement with antisyphilitic treatment.

Neurosis (“Hysteria”).—*Characteristics.*—In less severe cases of “hysterical” affections of speech it is not uncommon to find merely a loss of normal voice—where the patient can only utter her tale of woe in a whisper, breathing it softly into the ear of a sympathetic listener.

Chief Signs.—Absence of organic lesions; laryngoscopy, showing complete adductor paralysis or vocal cords approaching softly and without tension; other neurotic symptoms; cure by suggestion, persuasion, or by shock, mental or physical (administration of chloroform, alcoholic excess, intralaryngeal faradism).

Edema of the Glottis (Edematous Laryngitis).—*Characteristics.*—The voice becomes progressively more and more husky, rough, and deep, and then rather quickly disappears.

Chief Signs.—History of preceding trauma, laryngitis, or local inflammatory condition (cellulitis, erysipelas, diphtheria); or some general condition (such as nephritis, angioneurotic edema); dyspnea, increasing in intensity so that in an hour or two the condition becomes very critical; may be inspiratory stridor; greatly swollen epiglottis, visible and palpable; laryngoscopy (swollen aryepiglottidean folds, almost meeting in the middle line; occasionally edema below the cords).

Aneurysm of the Arch of the Aorta.—*Characteristics.*—In aneurysm of the transverse portion of the arch, loss of voice and hoarseness may occur as consequences of pressure on the recurrent laryngeal nerve, usually the left, inducing either a spasm in the muscles of the left vocal cord or paralysis.

Chief Signs.—Cough, “bovine” or “brassy,” often paroxysmal; dyspnea, often paroxysmal; may be hemoptysis; may be dysphagia; may be suprasternal pulsation, inequality of the pupils, inequality of the pulses, tracheal tugging; occasionally dilated veins and edema from venous pressure, dulness over the manubrium, bronchitis, bronchiectasis, collapse of the lung; positive Wassermann; x-ray.

Goiter (Struma; Bronchocele).—*Characteristics.*—If the goiter presses upon the recurrent laryngeal nerves the voice may show alterations, principally hoarseness.

For the differentiation of different types of goiter, see “Enlargement of the Thyroid Gland,” page 287.

Benign Tumor of the Larynx (*Papilloma*, "*Singer's Nodes*," *Polypi*, etc.)—*Characteristics*.—In a general way it may be said that neoplasms of the vocal cords first give rise to hoarseness, supraglottic tumors to cough, and infraglottic growths to dyspnea. Aphonia results, if the tumor prevents the approximation of the vocal cords.

Chief Signs.—May be attacks of glottic spasm, aphonia, and apnea, with intermittency or exacerbation of these symptoms if the growth is pedunculated; exaggeration of symptoms with any attack of inflammation of the larynx; laryngoscopy (revealing the growth).

Foreign Body in the Larynx.—*Characteristics*.—Substances lodged in the larynx, but lying in such a position as not to obstruct respiration, are attended by more or less hoarseness and coughing, as in the case of coins, and in some instances, tooth plates. These cause active symptoms only after congestion or inflammation has taken place.

Chief Signs.—May be history of aspiration of a foreign body; laryngoscopy; x-ray.

Carcinoma of the Larynx.—*Characteristics*.—Hoarseness is the first symptom; it usually comes on gradually and lasts for several months before any other symptom supervenes. The majority of the patients are in good general health. The hoarseness after a longer or shorter time is accompanied by dyspnea and cough. Aphonia finally occurs.

Chief Signs.—Occurrence usually after forty; may be sharp pain in the larynx, pharynx, or ear; dyspnea; cough, with at first scanty expectoration, later becoming purulent and bloody; may be dysphagia; later, involvement of the cervical lymph glands, those in the posterior triangle being involved first from supraglottic lesions, and those at the angle of the jaw first when the disease is subglottic; laryngoscopy (variable in the early stages, later appearance of a fungous mass); exclusion of syphilis; biopsy.

Chronic Pharyngitis (*Granular or Lacunar Pharyngitis*; *Clergyman's Sore-Throat*).—*Characteristics*.—In aggravated cases the voice becomes hoarse after moderate use, especially in public speakers, though the cords are neither red nor inflamed. The hoarseness is due, perhaps, to a spasm of the muscles of the pharynx and irritation of the superior laryngeal nerve.

Chief Signs.—See page 238.

Mediastinal Tumor.—*Characteristics*.—Hoarseness or aphonia, with a brassy cough, may occur from pressure on the recurrent laryngeal nerves.

Chief Signs.—Insidious onset with shortness of breath and cough; gradually developing dyspnea, often severe and paroxysmal; cough, often severe and paroxysmal; may be pain over the chest radiating to the arms, rarely as severe as in aneurysm; cyanosis; dysphagia; may be orthopnea; may be enlargement of the cervical glands; may be immobility or bulging of the affected side; dilatation of the superficial veins; physical signs (diminution of tactile fremitus, breath sounds, and vocal resonance; dulness on percussion); may be pleural effusion; x-ray.

Acute Phlegmonous Laryngitis.—*Characteristics*.—The voice may be hoarse in any degree, or aphonia may be present.

Chief Signs.—See page 265.

Chronic Atrophic Laryngitis (*Laryngitis Sicca*).—*Characteristics*.—Hoarse-

ness and even aphonia are present, especially in the morning, persisting until the crusts are expelled.

Chief Signs.—Presence of atrophic rhinitis; burning or pricking sensation after using the voice; cough of a hoarse, spasmodic character with expulsion of crusts; may be spasmodic dyspnea at night; carrionlike stench to the breath; laryngoscopy (pale mucous membrane with discolored crusts on the cords or in the inter-arytenoid space).

Bulbar Paralysis (*Glosso-labio-laryngeal Paralysis*).—*Characteristics.*—The voice changes are preceded by progressive weakness of the tongue and muscles of the cheeks and lips, followed by fibrillary twitchings and slowly progressive atrophy. Speaking becomes fatiguing, and slight changes in the voice become apparent. Finally the speech becomes lalling, dysarthric, the lingual letters d, t, l, r, n, s, are first slurred over, then the labial letters b, p, f, m, w, o, v. The laryngeal weakness causes hoarseness, monotony, and finally aphonia. The laryngeal paralysis may be bilateral, the abductors alone usually being involved, but more often the paralysis is unilateral.

Chief Signs.—See page 252.

Less Common Causes.—Spasm of the tensors of the vocal cords (aphonia spastica); congenital webs and stenosis of the larynx; lupous stenosis of the larynx; chronic ankylosis of the crico-arytenoid joint; chronic perichondritis, chondritis, and abscess of the larynx; acute infectious perichondritis; laryngeal arthritis; membranous laryngitis (pseudomembranous croup); cicatrices of the vocal cords; carcinoma of the thyroid; cretinism; myxedema (voice rough from dryness of the larynx); measles; smallpox; retropharyngeal abscess; trichiniasis; diphtheritic neuritis; tumor of the medulla or pons; thickened pleura; innominate or subclavian aneurysm; tabes dorsalis; acute ascending paralysis; beriberi; cholera; syphilitic meningitis; multiple sclerosis; coryza; exhaustion; lead palsy; leprosy; pericardial effusion; rheumatoid arthritis; acromegaly; alcoholism; acute bronchitis; pachydermia laryngis; tumor at the base of the skull; enlarged glands of the neck; esophageal tumor; tumor of the pharynx; scoliosis of the cervical vertebræ; apical tuberculosis; wound of the neck; fracture of the base of the skull; enlarged bronchial glands; cholera; exophthalmic goiter; insanity; pulmonary gangrene.

ABNORMALITIES NOTED BY LARYNGOSCOPY

Acute Catarrhal Laryngitis.—*Characteristics.*—The mucosa is red and more or less swollen from hyperemia and infiltration, or edema, according to the virulency of the inflammatory process. The cords are pinkish-red, or even as red as the mucosa. Sometimes ecchymotic spots of extravasated blood may be seen on their upper surfaces or free borders. The secretions appear as opaque plugs, which have a tendency to accumulate at the anterior commissure and to some extent along the cords. Follicular ulcers may be present, the denuded areas appearing as slightly roughened red spots, or, if covered with secretions, as whitish opaque ones.

Chief Signs.—See page 261.

Acute Phlegmonous Laryngitis.—*Characteristics.*—The mucous membrane is red, tense, and glassy, with three rounded, swollen masses above the chink of the

glottis. If the subglottic region is involved, the swollen membrane may be seen projecting from below the true cords.

Chief Signs.—Usually presence of some infectious disease; onset with chill and fever; hoarseness or aphonia; pain and soreness; husky or hoarse cough; dyspnea usually within twenty-four hours; increase in severity of symptoms.

Edema of the Glottis (*Edematous Laryngitis*).—*Characteristics.*—The laryngoscopic image shows the mucosa in the region of the aryepiglottic folds, the anterior and upper surface of the epiglottis, and sometimes the subglottic region to be tumefied. The surface of the mucous membrane is of a pale gray color.

Chief Signs.—See page 263.

Chronic Hypertrophic Laryngitis.—*Characteristics.*—Three varieties are recognized: (1) Chronic diffuse laryngitis, in which there is diffuse hyperemia of the laryngeal mucous membrane, including that of the epiglottis, but which in singers and speakers is generally greater, or entirely limited to, the true cords; this hyperemia is rarely demonstrable by laryngoscopy; the color varies in different individuals and at different times—the cords may be normal ivory-white, or pinkish-red, or streaked with red, or of a pale, mottled brown or slaty-gray color; (2) discrete or localized form, in which the hypertrophied tissue below the cords appears in the form of two sausagelike masses, nearly parallel with and beneath the true cords, the color varying from a pale grayish-pink to the deep red of active inflammation; (3) chondritis nodosa or singer's nodules, in which, in addition to general hypertrophy, there is a nodule on the free border of one or both cords, usually at the junction of the posterior and middle thirds, and in case of both, exactly opposite.

Chief Signs.—See page 261.

Chronic Atrophic Laryngitis (*Laryngitis Sicca*).—*Characteristics.*—The mucous membrane appears pale and dry, with discolored crusts on the cords, or in the interarytenoid space. The cords are dry and wrinkled and more or less covered with crusts.

Chief Signs.—See page 264.

Tuberculous Laryngitis (*Tuberculosis of the Larynx*).—*Characteristics.*—The first apparent change may be an ischemia of the mucous membrane, a typical ashen-gray color, though it may be red, inflamed, and indurated. The vocal cords may be hyperemic and swollen, or they may be lax, flabby, and nodular; when ulcerated on their free edges they appear "moth-eaten" or "mouse-eaten." Pale, pear-shaped swellings in the neighborhood of the aryepiglottic folds, obliterating the outlines of the cartilage of Wrisburg, are characteristic of the early stage. When the arytenoid cartilage is affected a club-shaped infiltration tumor is present. Small tubercles under the mucous membrane appear as small, grayish elevations, the size of a pinhead, seen frequently on the epiglottis, aryepiglottic folds, and ventricular bands. Tumor formations are common in the interarytenoid space and present a sessile, pedunculated, or wartlike appearance. The epiglottis is often involved, and when infiltrated presents the "turban-shape" appearance. Ulcers on the ventricular bands are irregular in outline, and covered with a thin, gray or yellowish exudate. When ulcerations are present they are constantly bathed in a mucopurulent secretion. On phonation it is frequently seen that the cords do not approximate, or there may be irregular action with impaired mobility. The cartilages may

become involved, giving rise to perichondritis and chondritis, and cicatricial contraction takes place as the healing process progresses, and abscesses may form.

Chief Signs.—See page 262.

Syphilitic Laryngitis (*Syphilis of the Larynx*).—*Characteristics.*—The secondary manifestations are merely hyperemia, or symmetrical ulcerations, or condylomata, which may undergo ulceration or disappear spontaneously. The tertiary manifestations are, in order of occurrence: (1) gummata; (2) ulcerations; (3) perichondritis and necrosis of tissue; (4) the resultant scars, deformities, and adhesions. Gummata may appear in any portion of the larynx, are diffuse or circumscribed, deep red, oval-looking swellings surrounded by inflammatory areas, and tend to break down rapidly and ulcerate. The ulcerations are usually deep and extensive, appearing to be punched-out; the edges are sharp and well defined, and surrounded by a red edematous areola. When the perichondrium and cartilages are infiltrated there is marked swelling of the soft tissues, abscess formation, and necrosis of the cartilages. The vocal cords, when involved, show irregular changes and marked immobility. Various deformities (webs, adhesions, stenosis) result in the healing process following this extensive necrosis.

Chief Signs.—See page 263.

Carcinoma of the Larynx.—*Characteristics.*—In the intrinsic variety, by laryngoscopy a tumor is usually visible in the supraglottic cases, involving, at least in the early stages, usually only one side of the larynx, with paralysis of a cord, first of the abductors and later in the disease, of the adductors. At first the growth resembles a papilloma; later there occurs a zone of peripheral hyperemia and infiltration with edema, and as the growth advances ulceration commonly occurs, generally at a point of irritation, as the free margin of the vocal cord, and cauliflowerlike excrescences appear. When the cartilages are finally involved necrosis may occur and perichondritic abscess and fistula follow. In the extrinsic variety, *i.e.*, those occurring at the superior aperture of the larynx, the growth at first may appear the same as the intrinsic form, but rapid and extensive ulceration soon follow.

Chief Signs.—See page 264.

Benign Tumor of the Larynx.—*Characteristics.*—The most common benign tumors of the larynx are fibromata, papillomata, and singer's nodules (which are a form of chronic laryngitis). Fibromata may be hard or soft, the latter when pedunculated forming polypi. They rarely grow to large size, are always covered by unbroken mucous membrane, and are deep red to pale pink in color. The hard fibroma appears as an oval, smooth nodule with a broad base. The soft fibroma may be pedunculated or lobulated. Fibromata are usually single and are the most common subglottic tumors. Papillomata are warty growths, which may be of various size and extent, and pedunculated, sessile, or diffuse, generally situated on the vocal cords or in the anterior commissure. They appear as irregular reddish or pinkish elevations.

Chief Signs.—See page 264.

Foreign Body in the Larynx.—*Characteristics.*—Laryngoscopy quickly reveals a foreign body in the larynx or trachea. The mucous membrane may be hyperemic due to the trauma.

Chief Signs.—See page 264.

Laryngeal Diphtheria (*Membranous Croup*).—*Characteristics.*—Laryngoscopy

is not of great service, as the membrane is usually visible on the tonsils, fauces, or pharynx, and is contra-indicated in young children. The membrane appears as a deposit of exudate, at first of a gray or grayish-white color, later becoming white or dirty yellow. When removed it leaves a bleeding surface.

Chief Signs.—See page 262.

Paralysis of the Intrinsic Muscles of the Larynx.—*Characteristics.*—Clinically, paralysis of the larynx may be divided into paralysis of the adductors, paralysis of the abductors, paralysis of the tensors of the vocal cords, and complete paralysis, unilateral or bilateral. In bilateral adductor paralysis (due usually to “hysteria,” rheumatism involving either the muscles or the cricothyroid joint, or chronic poisoning by lead or arsenic), the vocal cords will be seen in the laryngeal mirror separated to the utmost degree (the voice being completely lost). In unilateral adductor paralysis, only one cord is seen in extreme abduction during phonation, and the opposite cord will be observed to pass beyond the median line, so as to approach as near as possible the paralyzed cord (whispering only being possible). Bilateral abductor paralysis (from pressure on the recurrent laryngeal nerves or central lesions involving the origin of the vagi and spinal accessory nerves) gives the picture of both cords in a fixed position in the median line, which open but slightly during inspiration and are forced apart during expiration (the voice being husky). When unilateral abductor paralysis only is present (from pressure on one recurrent nerve), the affected cord will be seen to remain in the median line, even during forced inspiration (the voice being barely affected). Paralysis of the internal tensors, the thyro-arytenoids (due to overstrain of the voice), causes the cords to assume a slightly curved appearance during phonation, and an elliptical gap appears between their centers (and the voice is husky, high pitched, and weak). If there is complete paralysis of the intrinsic muscles (due to complete paralysis of both recurrent laryngeal nerves), the cords are in the “cadaveric” position, entirely motionless and midway between abduction and adduction (while there is extreme difficulty in coughing, speaking, and clearing the throat). When this complete paralysis is unilateral, the affected cord only is in the “cadaveric” position and motionless, while the healthy cord approaches it during phonation (there being a characteristic alteration of the voice). The abductors are always affected before the adductors when the nerves are paralyzed (“Semon’s law”). Single muscles are rarely paralyzed except in diphtheria and other local inflammations of the larynx, and in “hysteria.”

Less Common Causes.—Acute traumatic laryngitis; traumatic stenosis; acute infectious epiglottitis; acute infectious perichondritis; lupus of the larynx; rhinoscleroma; leprosy laryngitis; membranous laryngitis (pseudomembranous croup); pachydermia laryngis; sarcoma of the larynx; tabes dorsalis (may be abductor paralysis without voice changes).

THE NECK

SYMPTOMS	PAGE
Pain in the Neck (and "Stiff Neck")	269
Localized Tenderness of the Neck	272
Throbbing of the Carotid Arteries	273
Pulsation of the Jugular Veins	274
Diastolic Collapse of the Jugular Veins (Friedreich's Sign).....	275
Episternal Pulsation	275
Supraclavicular Pulsation	276
Engorgement of the Jugular Veins	277
Swellings in the Neck	277
Enlarged Lymph Glands of the Neck (Cervical Adenopathy).....	282
Enlargement of the Thyroid Gland (Goiter).....	287
Sinuses in the Neck (and Fistulæ)	289
Torticollis (Wry-Neck; Twisted Neck)	290
Tracheal Tugging	291
Skin Affections of the Neck	292

PAIN IN THE NECK

(and "Stiff Neck")

Wounds and burns are obvious causes of pain.

Myalgia (*Myositis; Muscular Rheumatism; Fibrositis*).—*Characteristics*.—Pain in the affected muscles is a prominent feature and may be constant or occur only when the muscles are drawn into certain positions. It may be a dull ache, like the pain of a bruise, or sharp, severe, and cramplike. Pressure on the part sometimes gives relief. There seems to be a special form occurring in the muscles of the neck and head in which there is at first swelling and puffiness, later induration; it may accompany overwork or changes in the weather and may be associated with headache, the so-called "indurative headache." In so-called "stiff neck," or "rheumatic torticollis" the muscles of the anterolateral or back regions of the neck are affected. This is very common, often unilateral, and occurs most frequently in the young. The patient holds the head in a peculiar manner turned to one side and rotates the whole body in attempting to turn it.

Chief Signs.—History of exposure to cold or trauma; usual occurrence in an acute form, occasionally becoming subacute or chronic; tendency to recurrence; exclusion of organic disease.

Carbuncle.—*Characteristics.*—The back of the neck is one of the common sites for carbuncle, and the pain is usually severe.

Chief Signs.—May be constitutional symptoms from the start; dusky edema of the skin; appearance of multiple pustules in a few days, which rupture about the tenth day, discharging necrotic plugs; honeycombed skin; discharge of bloody pus; duration of several weeks.

Strain or Sprain.—*Characteristics.*—The symptoms are pain and tenderness, especially when certain movements are made, against which the patient often protects himself by muscular contraction (voluntarily twisted neck).

Chief Signs.—History of blow, fall, or overtwisting of the neck; negative x-ray.

Cellulitis of the Neck.—*Characteristics.*—If there is deep or extensive cellulitis, the neck is swollen and hardened and the skin red and edematous. There will be pain and tenderness in proportion to the extent of the inflammation.

Chief Signs.—History of infectious fever, exposure to cold or injury, or presence of infection in the area drained by the cervical lymph glands; absence of fluctuation or pointing, if deep; may be bending of the head toward the affected side; may be dysphagia, dyspnea, and symptoms of pressure on vessels or nerves; may be swelling in the submaxillary region (in angina Ludovici); may be boardlike inflammatory hardness (in woody phlegmon); may be constitutional symptoms of sepsis; presence of pus on aspiration or incision.

Spasmodic Torticollis.—*Characteristics.*—Sensory symptoms are not common. Pain of a neuralgic type may be complained of at the back of the head and neck. The spasm itself is not painful, but creates great discomfort, and if the movement is inhibited by an effort of the will great distress ensues.

Chief Signs.—See page 290.

Tuberculosis of the Cervical Vertebrae (*Spinal Caries; Pott's Disease*).—*Characteristics.*—Pain develops gradually and may be an early or late symptom. The pains are often felt above the point of disease, frequently in the form of occipital neuralgia; sometimes they are referred to the front or side of the neck. They may be so frequent and so severe that the face assumes a constant expression of anxiety or distress. In other cases pain is excited only by an attempt at movement or jarring of the body. Recumbency may give relief.

Chief Signs.—Occurrence in childhood; fixation of the head, torticollis, or forward displacement of the head; neck broadened or thickened; kyphosis or angular prominence; may be fever; may be chronic retropharyngeal or retro-esophageal abscess; later paraplegia; tuberculin test; x-ray.

Osteo-Arthritis of the Spine (*Arthritis Deformans; Spondylitis Deformans; Rheumatoid Arthritis*).—*Characteristics.*—The joints of the spine, especially in the cervical region, are often involved in the more acute forms, but involved in the chronic variety also, either alone or as a part of general arthritis. There are stiffness and pain, the latter being increased by movements of the head or twisting of the neck. Pressure on the nerve roots may cause neuralgic pain.

Chief Signs.—Occurrence in adults; progressive rigidity of the spine; absence

of fever and tenderness; may be zoster; may be evidence of arthritis in other joints; x-ray.

Fracture-Dislocation of the Cervical Vertebræ.—*Characteristics.*—The regions of the neck most liable to injury are the atlo-axial and cervicodorsal. While either fracture or dislocation may occur alone they more commonly occur together. In fracture-dislocation great displacement is unusual but pain is always present, which is increased by motion, and there is tenderness on pressure over the affected region.

Chief Signs.—History of severe direct injury to the neck, or more commonly indirect injury (a fall on the head, diving in shallow water particularly); shock of varying degree; may be deformity and crepitus; may be forward, backward, or unilateral displacement of the head (in dislocation); may be palpable deformity through the pharynx; may be difficulty in swallowing or breathing (phrenic nerve involvement); evidence of interference with the functions of the cord, where this is injured by contusion or compression, in the form of more or less complete paralysis and anesthesia below the injury with decrease or abolition of the reflexes; x-ray.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—Frequently the pain radiates from the thorax up into the neck.

Chief Signs.—See page 275.

Neurosis ("Neurasthenia").—*Characteristics.*—An aching pain in the back of the neck and between the scapulæ is often complained of.

Chief Signs.—See page 40.

Cerebellar Tumor.—*Characteristics.*—The headache, which is a constant and early symptom, is as a rule most intense and persistent in the occipital region and not uncommonly radiates down the back of the neck.

Chief Signs.—See page 93.

Cerebrospinal Meningitis (Cerebrospinal Fever).—*Characteristics.*—An early and important symptom is a painful stiffness of the muscles of the neck. Associated with this is a severe headache located in the back of the head and radiating into the neck and back.

Chief Signs.—See page 89.

Diaphragmatic Pleurisy.—*Characteristics.*—When the dome of the diaphragm is involved, the pain may be referred to the neck and shoulder. This is often associated with pain on pressure in the back below the twelfth rib on the same side. In one-third of the cases the pain is spontaneous, while in the other cases it is elicited only by pressure and may then be severe. This pain is made worse by coughing and by deep pressure. It is sharply localized.

Chief Signs.—See page 370.

Cervical Rib.—*Characteristics.*—Pain radiating from the root of the neck to the tips of the fingers, more often than not along the ulnar border of the arm, is usually the first, and may be the only symptom. The pain is aching or dull and boring, and is much influenced by rest and position.

Chief Signs.—Occurrence of symptoms in persons who use their hands and arms continually; may be motor, sensory, and vasomotor disturbances in the arm; may be atrophy, even "claw-hand"; may be anesthesia and cyanosis; may be diminution of the radial pulse on the affected side; x-ray.

Tetanus.—*Characteristics.*—Stiffness of the neck is one of the earliest symptoms. There is pain in the neck during the paroxysms of opisthotonos.

Chief Signs.—See page 234.

Less Common Causes.—Erysipelas; abscess of the neck; acute thyroiditis; cervico-occipital neuralgia; cerebellar abscess; hypertension (the pain is occipital rather than nuchal); aneurysm of the arch of the aorta; chronic pulmonary tuberculosis; carcinoma of the thyroid; innominate aneurysm; spinal meningeal hemorrhage; serratus palsy; lymphadenoma; cervical pachymeningitis; fracture of the hyoid bone; fracture of the larynx; fracture of the trachea; syringomyelia; infective arthritis of the cervical vertebræ (following scarlet fever, diphtheria, tonsillitis, etc.); carcinoma of the cervical vertebræ; glandular fever; Bezold's abscess.

LOCALIZED TENDERNESS OF THE NECK

Inflammatory affections of the neck, as abscess, cellulitis, carbuncle, etc., are obvious causes of tenderness on pressure.

Acute Tonsillitis.—*Characteristics.*—There is tenderness on pressure over the lymphatic glands of the neck, which may be somewhat swollen, but never to the extent seen in diphtheria.

Chief Signs.—See page 237.

Peritonsillar Abscess (Quinsy).—*Characteristics.*—There is pain in the lateral muscles of the neck and often tenderness.

Chief Signs.—See page 238.

Diphtheria.—*Characteristics.*—Pharyngeal diphtheria is often accompanied by tenderness and swelling in the neck, principally in the lymph glands.

Chief Signs.—See page 245.

Tuberculosis of the Cervical Vertebræ.—*Characteristics.*—A painful spot may usually be found by pressing on the spines of the affected vertebræ. Distinct pain and tenderness often mean abscess formation.

Chief Signs.—See page 270.

Fracture-Dislocation of the Cervical Vertebræ.—*Characteristics.*—There is great tenderness over the affected vertebræ.

Chief Signs.—See page 271.

Diaphragmatic Pleurisy.—*Characteristics.*—Tender points are to be found along the trapezius, elicited especially on deep pressure. Sharply localized pain in the neck, spontaneous or only on deep pressure and on the same side as the abdominal pain, indicates involvement of the dome of the diaphragm. Similar symptoms are met with when the pericardial pleura is involved.

Chief Signs.—See page 370.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—Superficial tenderness is sometimes felt over the left sternomastoid muscle.

Chief Signs.—See page 275.

Cervical Rib.—*Characteristics.*—Pressure in the posterior triangle of the neck, just above the inner part of the clavicle, may give rise to pain radiating down the arm.

Chief Signs.—See page 271.

THROBBING OF THE CAROTID ARTERIES

This condition is recognized as a systolic pulsation along the course of the vessel from the sternoclavicular articulation to a midpoint between the angle of the jaw and the mastoid process. In thin or nervous persons pulsations are not infrequently to be seen in the carotids independent of any abnormal condition of the heart. Overexertion and the abuse of tobacco and other heart irritants cause the carotids to pulsate more than ordinarily. Emotional influences may have the same result. In high-grade anemias this phenomenon is often observed. Febrile states are accompanied by a similar throbbing due to erethism of the circulation.

Aortic Regurgitation.—*Characteristics.*—All of the peripheral arteries are seen to strongly pulsate. Not only is this true of the large superficial arteries, including the carotids, but even the small arteries in the hand and face may be seen to throb. The pulsations may be so forcible as to cause nodding of the head.

Chief Signs.—History of syphilis; headache; precordial pulsation; forcible apex beat; increased cardiac dulness; diastolic murmur at the base conducted down the sternum; Corrigan pulse; capillary pulse; high systolic, low diastolic pressure.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—If the dilatation of the aorta involves the aortic ring, increases its circumference, and thus renders the aortic valves incompetent, the symptoms of aortic regurgitation develop and carotid pulsation is marked. Again, if an aneurysm of the transverse arch involves the innominate artery the right carotid will pulsate less forcibly than the left.

Chief Signs.—See page 275.

Cardiac Hypertrophy (Left Ventricular).—*Characteristics.*—The arteries throb excessively, and in the extreme case the patient's body jogs rhythmically with every beat of the heart.

Chief Signs.—For causes of Cardiac Hypertrophy, see page 437.

Arteriosclerosis.—*Characteristics.*—In spare, elderly men with much-hardened arteries there is often noted a forcible throbbing of the carotids, due, of course, to the compensatory cardiac overaction.

Chief Signs.—Occurrence usually after middle age; diffuse headache; thickened arteries; high blood-pressure; left ventricular hypertrophy with accentuation of the second aortic sound; vertigo; may be confusion or lack of attention; later, may be progressive dementia, transient paralysis, aphasia or cerebral hemorrhage, sclerosis of the retinal vessels (ophthalmoscopy).

Exophthalmic Goiter (Graves' Disease).—*Characteristics.*—At times the greatest complaint is of the forcible throbbing in the arteries, especially in the neck, and the carotid arteries are seen to pulsate forcibly.

Chief Signs.—See page 288.

Effort Syndrome (Neurocirculatory Asthenia).—*Characteristics.*—Throbbing of the carotids is a prominent symptom in some cases, or may occur after exertion or upon excitement.

Chief Signs.—Occurrence under undue psychic or physical strain; breathlessness on exertion out of proportion to the exertions made; tachycardia, particularly under exertion or emotional stress, disappearing during sleep; undue fatigue on

exercise; palpitation; attacks of giddiness and fainting; precordial pain; general neurotic symptoms; normal basal metabolic rate.

Pernicious Anemia.—*Characteristics.*—Extraordinary throbbing of the arteries may occur, simulating aortic regurgitation, a likeness which is strengthened by a collapsing type of pulse.

Chief Signs.—See page 395.

Less Common Causes.—Hemorrhage; action of amyl nitrite; carotid aneurysm; innominate aneurysm; obliterated descending aorta; cerebral hemorrhage; paroxysmal tachycardia; cervical rib; acute aortitis.

PULSATION OF THE JUGULAR VEINS

This is always more marked on the right side and is recognized as a throbbing along the course of these vessels upward over the clavicular belly of the sternocleidomastoid muscles. It is of the greatest importance to determine whether these pulsations are systolic, presystolic, or both. Presystolic jugular pulsation, representing the physiological negative venous pulse, is occasionally to be detected in the spare subject; the pulsation is generated by the sudden arrest of the venous column during auricular systole, and is timed by palpation of the jugular vein with the finger-tips of the left hand while applying the tips of the fingers of the opposite hand to the opposite carotid artery or to the cardiac impulse.

Cardiac Decompensation (*Tricuspid Regurgitation*).—*Characteristics.*—Jugular pulsation, systolic in time, is almost pathognomonic of relative tricuspid insufficiency. The jugular pulse-wave rises gradually and falls away very suddenly, frequently causing momentary recession of the overlying tissues at the site of the pulsation, while the carotid wave rises abruptly and forcibly, but falls slowly and deliberately, and, moreover, is attended by unnatural arterial throbbing remote from the cervical region. A true venous pulsation travels upward from the root of the neck and produces distention and rhythmic throbbing of the vein, after it has been emptied from below upward by the finger; but if the pulsation be transmitted from the carotid artery, pressure over the vein distends it and exaggerates the pulsation above the point of constriction, below which the vessel collapses and becomes pulseless. A graphic record may be necessary to distinguish jugular from carotid pulsation.

Chief Signs.—Dyspnea or orthopnea; cyanosis; enlarged, pulsating, tender liver; edema and ascites; enlarged heart with diffuse apex-beat; systolic murmur at the tricuspid area, and accentuation of the second pulmonic sound; small, weak, often irregular pulse; epigastric pulsation; pulmonary engorgement.

Stokes-Adams Syndrome (*Heart-Block*).—*Characteristics.*—In complete heart-block jugular pulsations unaccompanied by carotid beats may be seen in the neck, synchronous with the sounds of the auricular contractions. When the auricles and ventricles accidentally contract synchronously from time to time there is noticed an abnormally large pulsation. No such superimposed waves occur in incomplete heart-block.

Chief Signs.—See page 448.

Chlorosis.—*Characteristics.*—Visible impulse may be present in the veins of the neck.

Chief Signs.—See page 395.

Premature Contractions (*Extrasystoles*).—*Characteristics.*—In cases of auricular premature contractions the premature jugular pulsation may occasionally be visible. More often, the coincidence of auricular and carotid waves in ventricular extrasystoles is recognized in the jugulars as abnormally large and premature pulsations.

Chief Signs.—See page 447.

Auricular Fibrillation.—*Characteristics.*—The jugulars are engorged and beat irregularly.

Chief Signs.—See page 447.

Less Common Causes.—Cancer cachexia; cirrhosis of the liver; pregnancy; mediastinal tumor; pernicious anemia; patent foramen ovale with mitral regurgitation; arteriovenous aneurysm (aorta and superior vena cava); auricular flutter; tricuspid stenosis.

DIASTOLIC COLLAPSE OF THE JUGULAR VEINS

(*Friedreich's Sign*)

Chronic Adhesive Pericarditis (*Adherent Pericardium*).—*Characteristics.*—Traction of pleuropericardial adhesions may produce retraction of the chest-wall during ventricular systole; during the succeeding diastole the elastic walls of the thorax expand, and thus aspirate the blood from the great veins at the base of the heart, resulting in diastolic collapse of the jugular veins.

Chief Signs.—See page 438.

Lateral Sinus Thrombosis.—*Characteristics.*—Unilateral jugular collapse, which does not disappear where the vein is compressed immediately above the clavicle, is indicative of this condition.

Chief Signs.—See page 19.

EPISTERNAL PULSATION

This sign is frequently encountered. It may not be abnormal in the emaciated and in the aged. It follows excessive physical effort and the ingestion of stimulants.

Effort Syndrome (*Neurocirculatory Asthenia: Soldier's Heart*).—*Characteristics.*—Pulsation in the episternal notch may occur.

Chief Signs.—See page 273.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—Systolic pulsation of the episternal notch attends aneurysm of the transverse portion of the aortic arch with great constancy.

Chief Signs.—May be history of syphilis; pain mild to anginoid; hoarseness or aphonia; may be slight hemoptysis; dyspnea, often paroxysmal; may be dysphagia; palpable or visible pulsation (expansile) in the upper sternal region especially alongside the sternum; may be inequality of the pupils and pulses; tracheal tugging; increased area of dullness; diastolic shock and sound over the sac; systolic thrill and murmur; fluoroscopy (expansile tumor); may be positive Wassermann.

Dilatation of the Aorta (*Atheroma of the Aorta*).—*Characteristics.*—If the aorta is dilated, a valuable diagnostic sign is pulsation in the suprasternal notch.

In addition, the right subclavian artery may be seen to pulsate above the clavicle, being lifted up as a result of dilatation of the aorta.

Chief Signs.—Occurrence after middle life; may or may not be history of syphilis; evidences of general arteriosclerosis; may be cardiac hypertrophy, signs of nephritis; may be vertigo; visible and palpable sclerotic arteries; tortuosity of the retinal vessels; hypertension (160 plus, over 100 plus); may be systolic aortic murmur; x-ray.

Aneurysm of the Innominate Artery.—*Characteristics.*—There may be a pulsatile swelling in the suprasternal notch, combined with the same condition at the right sternoclavicular articulation.

Chief Signs.—See below.

Dynamic Pulsation of the Aorta.—*Characteristics.*—Pulsation may be distinctly felt and perhaps seen in the suprasternal fossa during systole.

Chief Signs.—Occurrence in neurotic anemic women; may be forcible impact beneath the upper sternal area; violent throbbing of the abdominal aorta; absence of signs of aneurysm or dilatation of the aorta.

Less Common Causes.—Innominate aneurysm; cervical rib; anomalies in the size and distribution of the vessels at the root of the neck; exposure of the right subclavian artery by a contracted lung or conduction of its impulse by a consolidated lung of the corresponding side; scoliosis.

SUPRACLAVICULAR PULSATION

Dilatation of the Aorta.—*Characteristics.*—The subclavian artery, usually the right, may be seen to pulsate above the clavicle, being lifted up as a result of dilatation of the aorta.

Chief Signs.—See page 275.

Aneurysm of the Innominate Artery.—*Characteristics.*—A pulsatile swelling is produced at the right sternoclavicular articulation or in the suprasternal notch, with a systolic bruit over the tumor and conducted thence into the right, but not into the left carotid.

Chief Signs.—May be duskiess and puffiness of the face if the deep veins are compressed; edema of the right arm if the subclavian vein is compressed; dyspnea and dysphagia if the trachea and esophagus are compressed; may be lancinating pain in the right side of the hand, neck, chest, and down the right arm; may be hiccough, respiratory arrhythmia; x-ray.

Aneurysm of the Subclavian Artery.—*Characteristics.*—There is a pulsating swelling in the supraclavicular fossa (usually the right), at the subclavian triangle.

Chief Signs.—May be edema, pain, numbness, and loss of power in the corresponding arm; may be hebetude, vertigo, disordered vision, and venous engorgement if the jugular vein is compressed; may be respiratory disturbance and hiccough; x-ray.

Cervical Rib.—*Characteristics.*—If the rib is large it may raise the subclavian vessels and the pulsating artery over it is felt very distinctly and higher than natural in the neck.

Chief Signs.—See page 271.

ENGORGEMENT OF THE JUGULAR VEINS

This condition occurs as a physiologic respiratory phenomenon, demonstrated as an inspiratory acceleration and an expiratory delay in the venous current, which causes the jugulars to become appreciably fuller during expiration when an individual breathes forcibly and deeply. Distention of the jugulars is commonly noted in any operation of straining, as in lifting, coughing, defecating, vomiting, etc.

Cardiac Decompensation (*Relative Tricuspid Regurgitation*).—*Characteristics*.—The jugulars are distended and the positive venous pulse is demonstrable.

Chief Signs.—See page 274.

Aneurysm of the Arch of the Aorta.—*Characteristics*.—When pressure on the superior vena cava is exerted gradually by an aneurysm of the transverse arch there is undue prominence of the veins in the neck and upper extremities and congestion of the veins of the face. Sudden compression is rare. When one or other of the innominate veins is involved independently of the superior vena cava the obstruction manifests itself by one-sided distention of the veins of the neck.

Chief Signs.—See page 275.

Mediastinal Tumor.—*Characteristics*.—Gradual occlusion of the intrathoracic venous trunks brings about a slowly developing distention and tortuosity of the superficial veins of the neck, face, arms, and anterior chest-wall; bilateral phenomena of this sort indicate superior caval obstruction, and unilateral signs point to compression of an innominate vein or one of its tributaries.

Chief Signs.—See page 264.

Bronchial Asthma.—*Characteristics*.—During a severe paroxysm there may be some venous engorgement of the neck and face, with dusky hue of the countenance brought about by deficient oxygenation of blood.

Chief Signs.—See page 358.

Hypertrophic Emphysema.—*Characteristics*.—When the right heart fails under the stress of the intrapulmonary hypertension there will be general venous turgescence, one evidence of which will be engorgement and pulsation of the jugular veins.

Chief Signs.—See page 374.

Less Common Causes.—Chronic adhesive pericarditis; enlarged bronchial glands; bronchopneumonia; large pericardial effusion; postpharyngeal abscess; enlarged thymus; edema of the lungs; pertussis.

SWELLINGS IN THE NECK

(See also "Enlargement of the Thyroid Gland," page 287.)

Enlarged Lymph Glands (*Cervical Adenopathy*).—*Characteristics*.—Enlargement of the glands occurs in various conditions, each having special characteristics.

For causes of Enlarged Lymph Glands of the Neck, see page 282.

Carbuncle.—*Characteristics*.—The back of the neck is one of the favorite sites for this affection. There is an indurated inflammatory swelling with multiple pustules which rupture about the tenth day, discharging necrotic plugs and bloody pus.

Chief Signs.—See page 270.

Sebaceous Cyst.—*Characteristics.*—This variety of tumor is found in the skin of the front and back of the neck, but with less frequency than upon the head. It varies in size from a millet seed to an orange. It is of slow growth, soft, smooth, round or oval, movable but attached to the skin at one point, and its contents consist of a cheesy or milky matter.

Cellulitis.—*Characteristics.*—The neck is swollen and hardened and the skin red and edematous. External fluctuation and pointing are rare. In a special, very severe variety, called Ludwig's angina, there is a brawny swelling between the lower jaw and the hyoid bone.

Chief Signs.—See page 270.

Distended Jugular Bulb.—*Characteristics.*—There is a bluish, pulsating or quivering, fluid swelling just above the inner end of the clavicle, more marked on the right side, and due to a regurgitant tricuspid valve or mediastinal pressure. It may be emptied by milking from above down.

For causes of Engorgement of the Jugular Veins, see page 277.

Lipoma (*Simple; Diffuse; Intermuscular*).—*Characteristics.*—A simple lipoma may be found in any part of the neck; it is encapsulated, semifluctuating, and lies in the subcutaneous plane of fascia; it tends to grow larger. A diffuse lipoma develops in connection with the deep fascia, is not encapsulated, and usually appears symmetrically on both sides of the neck. An intermuscular lipoma resembles a simple lipoma but develops in the fascia between the muscles.

Superficial Abscess.—*Characteristics.*—A soft fluctuating swelling is present under the skin of the neck, usually in the back at one side. The superimposed skin is dusky and edematous. The symptoms are usually mild, and the abscess is often secondary to superficial infection of the scalp from scratching for the relief of the itching set up by pediculi.

Mumps (*Epidemic Parotitis*).—*Characteristics.*—A doughy, tender swelling fills the lateral region of the neck between the sternomastoid muscle and the jaw and extends forward upon the face to the zygomatic arch, so that the center of the tumor is usually the lobe of the ear. The other salivary glands may swell simultaneously with the parotids, but more frequently one side is involved a day or two in advance of the other. Pain usually precedes the swelling; it is increased by movement of the jaws, by pressure, and sometimes by the presence of acid substances in the mouth.

Chief Signs.—Occurrence usually between five and fifteen years; prevalence in winter and spring; epidemicity; incubation fourteen to twenty-one days; slight malaise; mild fever; relative lymphocytosis; may be orchitis or ovaritis; duration, seven to ten days.

Suppurative Parotitis.—*Characteristics.*—The swelling, which is unilateral, is located in the same situation as the tumor in mumps. There is, in addition to the swelling, pain, redness, and edema of the skin.

Chief Signs.—Occurrence during infectious fevers or pyemic states; severe constitutional symptoms; intense pain; leukocytosis.

Tumor of the Parotid Gland.—*Characteristics.*—The ear is pushed upward or backward by a movable, irregular, nodular mass, hard in some parts, soft in others (usually a mixture of chondroma, fibroma, myxoma and adenoma). If malignant

(sarcoma, carcinoma, endothelioma), the tumor is immovable, painful, grows rapidly, and tends to cause facial paralysis and enlargement of the lymph glands.

Fibroma.—*Characteristics.*—A slowly growing, firm, movable, spindle-shaped or oval tumor is present beneath the skin of the neck.

Thyroglossal Cyst.—*Characteristics.*—There is a small, tense, painless, sometimes fluctuating swelling in the midline of the neck anteriorly, usually in the neighborhood of the hyoid bone, or over the thyroid cartilage, due to patency of the thyroglossal duct. The cyst, which contains mucus or dermoid material, may rupture and constitute an incomplete median cervical fistula.

Branchial Cyst.—*Characteristics.*—Branchial cysts, which arise from unobliterated portions of the branchial clefts, are most commonly situated in the “triangle of election” of the left side (a triangle bounded above by the posterior belly of the digastric, behind by the sternomastoid, and in front by the anterior belly of the omohyoid). They are round, smooth, often fluctuating, and are very deeply situated, being in close relation with the great vessels. Their contents are serous or mucoid (hygroma) or sebum, hair, teeth, etc. (dermoid cyst).

Chief Signs.—May be hereditary history; appearance usually some years after birth; may be one or more fistulous openings, always along the anterior margin of the sternomastoid muscle, with often an irregularly shaped bit of skin and cartilage at the external orifice (“cervical auricle”); may be later epitheliomatous degeneration.

Tuberculous Abscess.—*Characteristics.*—A retropharyngeal abscess, when coming from caries of the vertebræ, usually pushes its way outward, and passing behind the great vessels, shows itself behind the outer edge of the sternomastoid muscle as a non-inflammatory, fluctuating tumor. The swelling may be quite large, extending almost from one ear to the other, forming a distinct collar. In rare instances an abscess originating from the upper dorsal spine may show itself at the base of the neck. An abscess from tuberculous glands may simulate these abscesses.

Chief Signs.—Presence of tuberculosis of the cervical vertebræ; examination of aspirated pus; x-ray.

Retropharyngeal Abscess (Idiopathic).—*Characteristics.*—Usually there is some swelling to be seen externally, just below the angle of the jaw in front of the sternomastoid muscle. Exceptionally this may be more prominent than the internal swelling.

Chief Signs.—See page 247.

Gumma.—*Characteristics.*—In its earliest beginning it can be felt as a pea-sized deposit or infiltration, growing slowly or rapidly, taking one or two weeks to several months to reach development. As it increases in size the overlying skin is slightly stretched, and becomes pinkish or dusky red. It may grow to the size of a walnut or larger and be considerably elevated. At first firm, it becomes soft and doughy and tends to break down and ulcerate, resulting in a punched-out ulcer with a gummy puriform secretion. In other instances the gummatous infiltration is more diffuse, the skin and tissue breaking down at various points, resulting in several irregular punched-out ulcers. It is less common on the neck than on some other parts, and is usually situated in and upon the sternomastoid muscle.

Chief Signs.—History or evidence of syphilis (tertiary stage); positive Wassermann; therapeutic test.

Hematoma of the Sternomastoid Muscle.—*Characteristics.*—There is a firm, round, painless swelling situated in the muscle; in infants, in whom it is most often seen, it is of the size of a cherry or gooseberry. Such a swelling is sometimes noticed at or soon after birth following a difficult labor.

Cystic Lymphangioma (*Cystic Hygroma; Hydrocele of the Neck*).—*Characteristics.*—There is a large cystic swelling in the side of the neck, first noticed at birth, and which may grow to huge size, extending even from the clavicle to the lower jaw and from the middle line of the neck to the spine. Some pass into the axilla, others into the anterior mediastinum. It contains a serous or mucoid material.

Actinomycosis.—*Characteristics.*—The first clinical evidence is often a hard lumpy swelling in the parotid or maxillary region, thus involving the upper part of the neck and jaw. The involved skin becomes elevated and reddened, and pea- to walnut-sized nodules develop and sooner or later soften and break down, discharging serum and seropurulent matter which contains large numbers of minute, friable, yellow, fish-roelike bodies, made up of conglomerate masses of the fungus.

Chief Signs.—Occurrence in agricultural laborers; slow course; occurrence of intestinal, pulmonary, and other metastases; rarity of severe constitutional symptoms or lymph gland enlargements; clear pus with “pin-head” masses; identification of filaments or clubs of the streptothrix.

Anthrax.—*Characteristics.*—Anthrax carbuncle or malignant pustule occurs occasionally upon the back of the neck, which, with the face and hands, constitute predilection sites in 90 per cent of the cases. A papule forms in three days after inoculation, rapidly becoming a vesicle containing bloody fluid and surrounded by an area of congestion, and the tissues about the lesion become swollen, reddened, and indurated. The vesicle bursts and dries, the base of it swells and enlarges, other vesicles appear in circles around it, and there is developed an “anthrax carbuncle” which shows a black or purplish elevation with a central depression. The surrounding tissues become purple and great edema may spread widely.

Chief Signs.—History of working in hides, hair, or foreign wool, or rarely in butchering; swelling of the lymphatic glands; high fever; pain usually slight; absence of pus; severity of the general symptoms compared with the local lesion; presence of anthrax bacilli in smears.

Cretinism.—*Characteristics.*—In the supraclavicular regions there are large pads of fat.

Chief Signs.—See page 41.

Cervical Rib.—*Characteristics.*—When sufficiently large to produce venous or vascular trouble, it forms a prominence at the base of the neck, and since it pushes the subclavian artery forward and upward, it may be mistaken for aneurysm.

Chief Signs.—See page 271.

Tumor of the Carotid Body.—*Characteristics.*—It is located at the bifurcation of the common carotid under the sternomastoid muscle, is hard, movable transversely but not vertically, and transmits a pulsation, thrill, and bruit from the carotid artery. It occurs commonly between twenty and thirty years of age, grows very slowly, and tends to become malignant. As it grows it eventually surrounds the common carotid artery.

Fracture of the Hyoid Bone and Thyroid Cartilage.—*Characteristics.*—

There is swelling and frequently ecchymosis of the neck over the injured part.

Chief Signs.—History of injury by hanging, throttling, or direct blow; sensation of something breaking; may be bleeding from the mouth; pain, worse on opening the jaws, or moving the head or tongue; difficulty in swallowing; muffled, hoarse voice, or aphonia; may be cough, dyspnea, deformity, and crepitus; x-ray.

Interstitial Emphysema (*Mediastinal Emphysema*).—**Characteristics.**—There is a rapidly developing swelling of the tissues under the skin which crackles when touched. It occurs under a variety of circumstances which allow escape of air into the tissues from the respiratory tract. These are (1) violent expiratory effort, as in whooping-cough, asthma, foreign body in the air-passages; (2) penetrating wounds, stabs, tracheotomy, fractured rib; (3) pathological processes leading to pulmonary rupture, as abscess, gangrene, tuberculosis; (4) straining as in childbirth. A supraclavicular bulging is sometimes seen in hypertrophic emphysema.

Esophageal Pouch (*Pulsion Pharyngeal Diverticulum*).—**Characteristics.**—The sac, when filled with food, may be visible as a swelling deep in the neck, or appear only on palpation, its situation being behind and at the side of the larynx or trachea, usually on the left side.

Chief Signs.—Occurrence usually in old age; progressive difficulty in swallowing; loud gurglings; may be regurgitations, spontaneous or from pressure; disappearance of the lump on pressure; x-ray.

Aneurysm of the Subclavian Artery.—**Characteristics.**—This is situated most commonly in the third division of the vessel on the right side, and shows as a pulsating swelling in the right supraclavicular fossa, at the subclavian triangle.

Chief Signs.—See page 276.

Myositis Ossificans Progressiva.—**Characteristics.**—Attacks of swelling and pain in the muscles of the neck and back occur, subsiding in a few weeks. The attacks recur and fibrosis follows, forming local tumors. Ossification develops in these tumors after further attacks, irregular masses gradually coalescing into shapes like coral, still movable on the deep tissues but later becoming adherent and immobile.

Chief Signs.—Onset in early infancy; occurrence more commonly in males; commonly, presence of microdactylia of the thumb and great toe; progress by recurrence of acute attacks; x-ray.

Submaxillary Sialadenitis.—**Characteristics.**—Swelling of the submaxillary glands may occur in children without apparent cause, often symmetric, and accompanied by moderate pain, slight fever, and some general disturbance. The submaxillary gland may also undergo rapid swelling sometimes when sialodochitis has developed from foreign bodies, infection, or salivary stones. The swelling may subside and reappear, leading to dilatation and induration of the gland.

Mikulicz's Disease.—**Characteristics.**—There is a chronic symmetrical (sometimes not symmetrical) enlargement of the salivary glands (parotid, submaxillary, sublingual) and of the lacrimal glands. It is a brawny, non-inflammatory swelling, painless though sometimes tender, and perhaps fluctuating in size.

Chief Signs.—Occurrence at any age after four; deformity of the face (broad cheeks and drooping eyelids); dryness of the mouth; may be interference with speech and mastication; benefit after use of arsenic.

Less Common Causes.—Peritonsillar abscess; Ludwig's angina; blood cyst of the neck (a diverticulum of one of the large veins; reducible by pressure and varying in size during respiration); hyoid or thyroid bursal cyst; surgical emphysema from *Bacillus aërogenes capsulatus* infection; abscess of the mediastinum (a pulsating and fluctuating tumor may appear at the sternal notch); ranula; angioneurotic edema; myxedema (fat pads at the root of the neck); chloroma; hydatid cyst; suppurative perichondritis; Bezold's abscess (empyema of the tip of the mastoid); enlarged thymus (palpable tumor in the suprasternal notch during expiration); empyema necessitatis; mercurial stomatitis (enlarged submaxillary glands); scurvy (enlarged submaxillary glands at times); neoplasm of the submaxillary gland.

ENLARGED LYMPH GLANDS OF THE NECK

(*Cervical Adenopathy*)

The lymphatics of the neck are both superficial and deep. The superficial nodes communicate freely with, and end in the deep ones. The submental nodes, lying beneath the chin, drain the region of the lower lip and chin and anterior part of the floor of the mouth. The submaxillary nodes are beneath the body of the mandible in the submaxillary triangle and drain the lips, nose, floor of the mouth, gums, anterior portion of the tongue, and side of the face. The superficial upper cervical (subparotid) nodes are just beneath the parotid lymphatics and behind the angle of the jaw; they drain the region of the masseter muscle as far back as the ear and the skin and scalp above. The superficial occipital nodes lie just below the superior curved line of the occiput or a little lower down in the hollow below the occiput; these drain the posterior part of the scalp. There are other nodes behind the ear on the mastoid process (posterior auricular nodes). There are, in addition to the above, two longitudinal groups of lymph-nodes. The anterior cervical lymphatics is the name given to those which tend to show in the anterior cervical triangle either beneath or in front of the sternomastoid muscle, between it and the median line; others, mostly deep, and very extensive, are situated along the edge of the sternomastoid muscle following the sheath of the vessels. The other group, the posterior cervical nodes, show behind the posterior edge of the clavicle; they not infrequently fill the posterior cervical triangle and extend beneath the muscles on each side.

Acute Tonsillitis.—*Characteristics.*—Swelling and tenderness of the lymph glands below the angle of the jaw may be present but is usually not great in milder cases, and may be absent. In severe types (septic sore-throat), enlargement of these glands is a striking feature and may persist for a considerable time after the establishment of convalescence.

Chief Signs.—See page 237.

Chronic Tonsillitis (and Adenoids).—*Characteristics.*—The lymph glands below the angle of the jaw and along the sternomastoid muscle are often palpable. During acute exacerbations they may become swollen and tender.

Chief Signs.—See page 243.

Tooth Infection (*Periodontal Infection; Periapical Infection; "Gum-Boil"*).—

Characteristics.—There may be enlargement of the glands at the angle of the jaw and in the submaxillary region on the side of the inflammatory swelling.

Chief Signs.—May be symptoms of septic absorption (headache, neuritis, arthritis, "neurasthenia," etc.); may be a discharging "gum-boil"; x-ray.

Pyorrhea Alveolaris (Riggs' Disease).—**Characteristics.**—Cervical adenitis is not uncommon.

Chief Signs.—See page 199.

Peritonsillar Abscess (Quinsy).—**Characteristics.**—The cervical lymph glands below the angle of the jaw become enlarged and tender.

Chief Signs.—See page 244.

Diphtheria.—**Characteristics.**—In severe cases the lymph glands at the angle of the jaw swell rapidly and may become very prominent, and there may also be extensive infiltration of the cellular tissue about them.

Chief Signs.—See page 262.

Scarlet Fever (Scarlatina).—**Characteristics.**—The cervical lymph glands are usually palpable, and in the diphtheroid or membranous type there is swelling of the glands below the jaw, with brawny induration of all the tissues of the neck. These not infrequently terminate in suppuration.

Chief Signs.—See page 766.

Measles (Morbilli).—**Characteristics.**—The glands behind the jaw are frequently palpable. Sometimes there is a polyadenitis.

Chief Signs.—See page 194.

German Measles (Rötheln).—**Characteristics.**—The occipital glands are usually enlarged, and less constantly also the posterior cervical and mastoid glands. When the eruption is intense, glands in other parts of the body become swollen.

Chief Signs.—See page 242.

Smallpox (Variola).—**Characteristics.**—Great swelling of the lymph glands of the neck occurs in the confluent form.

Chief Signs.—See page 770.

Erysipelas Faciei.—**Characteristics.**—The cervical lymph glands are swollen, but are usually masked in the edema of the neck.

Chief Signs.—See page 57.

Acute Pharyngitis (Simple Sore-Throat).—**Characteristics.**—There is stiffness of the neck, and the lymph glands may be enlarged and painful.

Chief Signs.—See page 237.

Catarrhal Stomatitis.—**Characteristics.**—The neighboring lymphatic glands are slightly enlarged and tender.

Chief Signs.—See page 191.

Ulcerative Stomatitis.—**Characteristics.**—Beneath the jaw are felt the large swollen lymphatic glands, which are painful and tender to the touch, but show no tendency to suppurate.

Chief Signs.—See page 192.

Pediculosis Capitis.—**Characteristics.**—There is apt to be swelling of the occipital and other cervical glands as the result of infection from scratching in neglected cases.

Chief Signs.—See page 28.

Eczema.—**Characteristics.**—Swelling of the lymph-nodes in the region of the

eruption is a constant feature of eczema of the face and scalp; in the former case the glands at the angle of the jaw are involved, in the latter the occipital. They may reach the size of a chestnut or walnut and occasionally suppurate.

Chief Signs.—See page 27.

Impetigo Contagiosa.—*Characteristics.*—When occurring in the scalp of children there is liable to be enlargement of the occipital glands from septic absorption.

Chief Signs.—See page 28.

Cellulitis.—*Characteristics.*—Septic infections of the skin of the cheek, eyelid, ear, or temporal region of the scalp usually cause enlargement of the upper superficial cervical or pre-auricular glands; those of the posterior region of the scalp are accompanied by enlargement of the occipital nodes.

Chief Signs.—See page 270.

Seborrheic Dermatitis.—*Characteristics.*—The occipital glands are frequently enlarged when the scalp is the seat of the disease.

Chief Signs.—See page 28.

Tuberculous Adenitis (Scrofula).—*Characteristics.*—The swelling of the glands usually begins gradually; in many cases both sides are involved, but as the disease progresses the advanced changes are usually confined to one side. In other cases the first swelling noted is an acute one, but, unlike other acute enlargements, it does not subside, but persists. The symptoms in most cases are characterized by remissions and exacerbations, and during exacerbations they may be tender and painful. The glands first affected are usually those situated at the bifurcation of the common carotid artery, making their appearance just in front of the sternomastoid muscle, sometimes behind it, and at the level of the upper border of the larynx or the hyoid bone. The usual size reached is from that of an almond to an English walnut. At first the tumors are movable and preserve their distinct outline; later they become adherent, first to the deeper tissues and to each other, finally to the skin, and there is formed an irregular nodular mass. As the process approaches the surface there are small spots of softening, then there is distinct fluctuation; the skin becomes discolored and finally gives way, and there is a discharge of thick, curdy pus, which may continue for an indefinite time. This course is repeated with each successive gland which breaks down. In slowly progressive cases suppuration is less frequent. The glands which become most affected are those of the posterior cervical triangle; the process spreads down the neck (superficially and deeply) and involves the glands above the clavicle and later perhaps those of the axilla.

Chief Signs.—Occurrence usually in children; anemia; slight fever in rapid cases; slow progress; sinuses and scars; may be concomitant joint, spine, or peritoneal tuberculosis; biopsy.

Vincent's Angina.—*Characteristics.*—There is generally some swelling of the submaxillary glands, but this is not marked as in tonsillitis. It is more marked when occurring in children. The superficial set posterior to the sternomastoid may be involved.

Chief Signs.—See page 199.

Syphilis (General).—*Characteristics.*—In secondary or tertiary syphilis there are often found somewhat enlarged, firm, almond-shaped, painless, and non-adherent

occipital glands, frequently associated with enlarged epitrochlear glands and occasionally other glands. Occasionally in late congenital syphilis there is a general glandular enlargement of a similar nature.

Chief Signs.—History of the primary lesion (over six weeks previous); may be rash, sore-throat, condylomata, alopecia, anemia, fever, headache, insomnia (secondary syphilis); may be gummata and nodular cutaneous syphilids (tertiary stage); positive Wassermann.

Chancre.—*Characteristics.*—Occasionally the lip, tongue, eyelid, or tonsil may be the seat of the extragenital chancre. A suspicious lesion with “shotty” enlargement of the nearest anatomically related lymph glands is almost invariably found to be a chancre. Thus, a sore on the tongue or lip may be connected with the enlargement of a single, movable submental or submaxillary gland, of the tonsil with a single large node beneath and at the middle of the sternomastoid muscle, and of the eyelid with an enlarged pre-auricular gland.

Chief Signs.—History of suspicious contact; presence of a chronic indurated sore; may be a positive Wassermann; dark field examination, revealing spirochetes.

Carcinoma (of the Tongue, Lip, Cheek, Nose, Palate, Fauces, Tonsil, Pharynx, or Larynx).—*Characteristics.*—The submaxillary or submental glands are involved early and extensively. Malignant disease of the lymph glands is characterized by rapid growth, by stony hardness, by infiltration of the surrounding tissues (including skin, muscle, etc.), by pain, and perhaps by softening with later discharge of the pulaceous material.

Chief Signs.—Occurrence after forty; presence of a chronic spreading ulcer with indurated edges and a foul, sloughing base; biopsy.

Carcinoma of the Breast.—*Characteristics.*—The glands above the clavicle often enlarge, though not as soon or as often as those of the armpit.

Chief Signs.—See page 384.

Glandular Fever.—*Characteristics.*—Acute enlargement of the cervical lymphatics is a characteristic feature of the disease. On the second or third day the glands enlarge, especially behind the sternomastoid, commencing on one side and spreading to the other, forming a definite, painful mass. The posterior cervical glands may also enlarge, less often the axillary and inguinal.

Chief Signs.—Epidemicity; occurrence in children between five and eight years; onset sudden; pain on moving the head and neck; fever (101° to 103° F.); obstinate constipation; slightly reddened tonsils; subsidence gradually after a few days, with duration of two to three weeks; slow convalescence; no mortality.

Hodgkin's Disease (Lymphadenoma).—*Characteristics.*—Enlargement of the cervical glands is usually an initial symptom. The glands are discrete, freely movable (until the mass is very large), never adherent to, and with no reddening of, the skin. There is never ulceration nor caseation. The glands are soft when their growth is rapid, firm and hard when slow. The swelling commonly commences in the posterior triangle of the neck, but later the disease may affect all lymphoid tissue and produce enormous masses. The masses of glands are often described as resembling bunches of large grapes or as a number of marbles imbedded in cotton wool. The swellings are painless and not tender. Rarely the capsule may be infiltrated and adjacent tissues invaded.

Chief Signs.—Occurrence commonly in young adults; insidious onset; pallor,

anemia, weakness; palpable spleen; slight or irregular fever (may be a peculiar relapsing pyrexia); may be boils and pruritus; may be bronzing of the skin; may be axillary, mediastinal, retroperitoneal, inguinal, lung, or spinal cord glandular involvement; pressure symptoms, according to location; blood examination (eosinophilia, normoblasts, later may be lymphocytosis); biopsy.

Abdominal Malignancy.—*Characteristics.*—The glands immediately above the clavicle, especially those on the left side in the region of the sternomastoid muscle, may be enlarged without affection of any of the other glands of the neck. This is due to secondary deposits ascending along the course of the thoracic duct.

Chief Signs.—Occurrence after forty; emaciation and cachexia; may be evidence of primary growth in the stomach, gall-bladder, pancreas, colon, rectum, ovary, or even the testicle or kidney.

Intrathoracic Malignancy.—*Characteristics.*—The glands immediately above the clavicle, especially those on the right side, may be enlarged.

Chief Signs.—Occurrence after forty; emaciation and cachexia; may be evidence of primary growth, particularly in the esophagus.

Tuberculosis of the Tongue.—*Characteristics.*—The glands under the jaw on each side become enlarged and tender.

Chief Signs.—Occurrence between the twentieth and fiftieth years; predominance in males; may be existence of primary tuberculosis in the lung; may be presence of an elevated, gray, uninflamed induration in the mucous membrane; ulceration, early or late, reddish in color, usually non-indurated, with irregular edges and yellowish floor; exclusion of syphilis; biopsy.

Glanders.—*Characteristics.*—In acute glanders of the nose the lymph glands of the neck are usually much enlarged. In chronic glanders of the nose the regional lymphatic glands, including those of the neck, are often involved, and the process is frequently mistaken for syphilis.

Chief Signs.—See page 156.

Tularemia.—*Characteristics.*—Submaxillary adenitis may follow within forty-eight hours after the bite of a deer-fly which has previously stung an infected rabbit. Months later the glands may suppurate.

Chief Signs.—History of fly bite above the neck; sudden onset with glandular swelling, chills, and fever; continuous remittent fever for two or three weeks; slow convalescence; blood serum agglutination test (for *Pasteurella tularensis*).

Chronic Lymphatic Leukemia.—*Characteristics.*—The lymphatic glands of the cervical chains are most prominent ordinarily, but marked enlargement may be present in the axillary or inguinal groups, and, furthermore, nodes ordinarily inconspicuous may form large tumors. The tumors present are, as a rule, separated and movable, free from acute inflammatory change, and show no tendency to supuration. They seldom exceed an egg in size and are usually painless and free from tenderness.

Chief Signs.—Occurrence usually after forty; enlarged spleen; enlarged tonsils; weakness; wasting; albumin and casts; may be pressure symptoms (if internal groups are greatly involved); later fever and anemia; may be skin tumors; blood examination (leukocytes 60,000 to 100,000 per c. mm., small lymphocytes over 90 per cent); duration, two to ten years.

Acute Lymphatic Leukemia.—*Characteristics.*—Enlargement of the lymph-

atic glands, including the cervical, occurs in most cases, but is rarely very great and may be late in developing.

Chief Signs.—Occurrence usually under twenty; acute onset; fever (103° to 104° F.); prostration; vomiting; pallor; swelling and ulceration of the gums, cheek, tonsils; palpable spleen; hemorrhage from the gums, nose, stomach, rectum, vagina; purpura; blood examination (leukocytes 20,000 to 100,000, but may be leukopenia at first or throughout; small lymphocytes over 90 per cent; severe anemia); duration, three weeks to three months.

Lymphosarcoma.—*Characteristics.*—The cervical glands may be involved and clinically the case may resemble Hodgkin's disease. The glands, however, form larger masses, grow more rapidly, involve the capsules, and attack adjacent structures.

Chief Signs.—Rapid growth; pressure signs in the chest and abdomen (more common than in Hodgkin's disease); spleen not palpable; rapid emaciation; biopsy.

Status Thymicolymphaticus.—*Characteristics.*—The cervical and axillary glands are enlarged.

Chief Signs.—Occurrence in childhood; flabby, fat overgrowth of the body; hypoplasia of heart and vessels; enlarged tonsils; persistent thymus gland (area of dulness at the upper part and to the left of the sternum, merging with the cardiac dulness and shifting upward, with extreme retraction of the head; bulging, visible or palpable, in the episternal notch); laryngoscopy; x-ray.

Less Common Causes.—Chronic pulmonary tuberculosis (cervico-axillary); gumma of the tongue; Malta fever (submaxillary); Mikulicz's disease (submaxillary); symmetrical adenolipomatosis (submaxillary); cheilitis; glossitis; leukoplakia; ecthyma; Parinaud's conjunctivitis; perichondritis syphilitica (along the sternomastoid); bubonic plague; serum-sickness; thrombosis of the lateral sinus; varicella; pertussis; scalp sores; trypanosomiasis.

ENLARGEMENT OF THE THYROID GLAND

(Goiter)

A thyroid growth is characteristic in that it follows the movements of the gland during deep respiration, deglutition, and coughing; the only exceptions are when the size of the mass is excessive, when a malignant growth or an inflammatory process produces adhesions which inhibit the vertical movements, or when the patient has received x-ray treatment, which also produces adhesions. During menstruation and pregnancy the thyroid becomes enlarged, but seldom sufficiently so to cause symptoms.

Colloid Goiter (*Simple Goiter; Non-toxic Parenchymatous Goiter; Struma; Bronchocele*).—*Characteristics.*—There may be a painless symmetrical enlargement of both lobes and the isthmus of a soft granular character (parenchymatous goiter), or the swelling may be irregular in shape with nodular irregularities of varying hardness, the irregularity being usually more marked in one lobe than in the other (nodular colloid goiter). Retention cysts or hemorrhagic cysts may develop, forming soft, smooth and globular, sometimes fluctuating tumors. The whole gland or one lobe sometimes attains a large size.

Chief Signs.—Onset between fifteen and twenty-five years; may be symptoms of pressure (dyspnea, especially at night, inspiratory stridor and cough, dysphagia, hoarseness, “goiter heart” from pressure on the vagus or pressure dyspnea); may be sudden increase in size (hemorrhage); normal or slightly lowered basal metabolic rate; disappearance of the small, soft, early variety under iodine or thyroxine therapy.

Adenomatous Goiter.—*Characteristics.*—There is a painless, symmetric enlargement of the thyroid gland with one or many rounded tumors felt on palpation. These tumors may be cystic, soft, hard, or even stonylike, according to the degenerative changes that have occurred (cystic, hemorrhagic, calcareous).

Chief Signs.—First appearance between fifteen and twenty years; slightly lowered basal metabolic rate at first; appearance of symptoms of hyperthyroidism (thyrotoxicosis, toxic adenoma) in 23 per cent after an average of sixteen years’ duration, with tremor, flushed moist skin, tachycardia, loss of weight and strength, cardiovascular symptoms (arrhythmia, palpitation, dyspnea, edema, high blood-pressure), and increased basal metabolic rate; pressure symptoms in some cases (when large or substernal).

Mixed Goiter (*Adenomatous-Colloid*).—*Characteristics.*—This type of goiter may take the form of a painless symmetrical enlargement with small nodular growths, or an irregularly nodular tumor, the adenomas becoming more evident after reduction of the colloid content with iodine very cautiously administered (may initiate hyperthyroidism in this type of goiter).

Chief Signs.—Those of either or both of the above forms.

Exophthalmic Goiter (*Graves’ Disease; Basedow’s Disease; Hyperthyroidism*).—*Characteristics.*—A painless, symmetrical, soft but firm, smooth, rarely very great enlargement is present, usually with signs of increased vascularity, as visible pulsation, thrill, and bruit. The right lobe may be larger than the left. The size may vary from time to time, but not always in relation to the severity of the symptoms.

Chief Signs.—Occurrence usually in the third or fourth decades; exophthalmos; tachycardia; fine tremor; ocular signs (Von Graefe’s, Stellwag’s, Möbius’, Joffroy’s); nervousness; flushing and sweating; loss of weight and strength; may be vomiting and diarrhea; increased blood-pressure or high pulse-pressure; toxic crises; increased basal metabolic rate.

Malignant Goiter (*Usually Carcinoma*).—*Characteristics.*—A hard, nodular, and irregular swelling of the thyroid is present, and the gland is tender on pressure. Later the tumor becomes large, stony, hard, and immovable. The skin becomes red and adherent to the tumor.

Chief Signs.—Steady or rapid increase in rate of growth of a long-standing nodular tumor of the thyroid in a patient over thirty-five years; pressure symptoms (changed voice, cough with excess of mucus, difficulty in swallowing, dyspnea); pain in the region of the thyroid, in the neck generally, or radiating to the ears or shoulders; cachexia; metastases (to the lungs, skull, brain, and liver, especially).

Congestion of the Thyroid.—*Characteristics.*—The gland is symmetrically enlarged, usually only to a slight degree.

Chief Signs.—Presence of cardiac disease, anemia, puberty, menstruation, preg-

nancy, mediastinal growth, overexertion, or emotional factor; unchanged basal metabolic rate.

Acute Thyroiditis and Strumitis.—*Characteristics.*—The gland is swollen, hard, and tender, with local signs of inflammation. Resolution without suppuration may take place (40 per cent), or multiple abscesses may develop, become confluent, and break through the skin or invade surrounding structures. Thyroiditis of a goiter is strumitis.

Chief Signs.—Presence of an infectious disease or history of injury; sudden onset with chill and fever; dyspnea; dysphagia; radiating pains.

Less Common Causes.—Ligneous goiter (Riegel's disease); status lymphaticus; gummata; chronic thyroiditis (in syphilis, tuberculosis, actinomycosis, hydatid disease); sarcoma; malignant adenoma; tuberculosis of the thyroid gland.

SINUSES IN THE NECK

(and *Fistulæ*)

Tuberculous Adenitis (*Scrofula*).—*Characteristics.*—If the glands caseate, soften, and suppurate, the overlying skin becomes adherent and red, and finally breaks open, leaving a discharging sinus or sinuses. Large, irregular, and usually very intractable ulcers form. The skin is undermined for a considerable distance and has an unhealthy appearance. A thick, curdy pus is discharged. After remaining open for months the sinuses and ulcers may heal, leaving large, unsightly scars.

Chief Signs.—See page 284.

Congenital *Fistulæ* (*Branchial *Fistulæ**).—*Characteristics.*—*Fistulæ* and fissures in the neighborhood of the ear are vestiges of the first branchial cleft. Congenital *fistulæ* of the neck are most frequent in the neighborhood of the fourth cleft, and open externally at the anterior edge of the sternomastoid close to its lower end. *Fistulæ* at the anterior or posterior edge of the sternomastoid at the level of the larynx are the remains of the second or third cleft. A fistula or sinus in the median line of the neck anteriorly is usually due to a patent thyroglossal duct, which in the embryo passes from the isthmus of the thyroid gland up in front of the trachea and larynx, then behind or through the body of the hyoid bone to open at the base of the tongue. All of these *fistulæ* give rise to a mucoid discharge.

Actinomycosis.—*Characteristics.*—This disease occurs most frequently in the lower jaw and adjacent tissues. It begins as a firm and painless swelling that gradually increases in size and breaks down at various points, giving rise to sinuses that discharge pus having a peculiar earthy odor and containing minute, gritty, sulphur-yellow bodies. Portions of the mass may heal, giving a nodular and puckered appearance.

Chief Signs.—See page 236.

Less Common Causes.—Gumma.

TORTICOLLIS*(Wry-Neck; Twisted Neck)*

(See also "Head Turned to One Side," page 23.)

Congenital Torticollis (*Permanent Torticollis*).—*Characteristics*.—The head and neck are drawn to one side, and are so twisted that the face is turned toward the side opposite the contracted muscles. It may not be noticed for some years because of the short neck of infancy.

Chief Signs.—Presence usually from birth; failure of development of the side of the face on the affected, as compared with the sound, side; permanency; absence of pain; compensatory lateral curve in the cervical spine, concave toward the affected side, with secondary dorsal curve concave in the opposite direction; irreducibility; preponderance on the right side.

Spasmodic Torticollis.—*Characteristics*.—The head, when the attack comes on, is jerked constantly to one side, usually the left. Though the movement is apparently a unilateral one it is really a bilateral affair, since muscles on both sides of the neck are employed to produce it. There is sometimes also a backward jerk. The movement may be tonic, clonic, or tonico-clonic. The patient can often curb the movement by means of some antagonistic gesture, as by light pressure on the chin with his finger. In the commonest form, in which the sternomastoid muscle plays the principal rôle, the mastoid on the affected side is drawn toward the shoulder, turning the head to the opposite side and raising the chin. In the "retro-colic type" the deep posterior neck muscles are chiefly contracted, drawing the head back.

Chief Signs.—Occurrence usually after middle life with gradual onset, at first in paroxysms, later becoming more or less continuous; existence of neuropathic taint; chronicity; may be presence in certain reflex types, of diseased teeth, labyrinthitis, or occupation neurosis (cobblers, tailors).

Rheumatic Myositis (*Rheumatic Torticollis; "Stiff Neck"*).—*Characteristics*.—The muscles of the anterolateral or back regions of the neck are affected. This is very common, often unilateral, and occurs most frequently in the young. The patient holds his head in a peculiar manner turned to one side and rotates the whole body in attempting to turn it.

Chief Signs.—See page 269.

Tonsillitis.—*Characteristics*.—Reflex torticollis may sometimes result from infection of the tonsils or pharynx, probably through the mechanism of a peripheral neuritis. This is probably the etiology in cases following scarlet fever, measles, or diphtheria.

Chief Signs.—Hypertrophy, redness, and presence of cheesy material in the follicles.

Cervical Adenitis.—*Characteristics*.—Spasmodic torticollis may result from irritation of the nerves by acute or chronic adenitis of the neck (especially tuberculous), or by cellulitis.

For causes of Enlarged Lymph Glands of the Neck, see page 282.

Tuberculosis of the Cervical Vertebrae (*Pott's Disease; Spinal Caries*).—

Characteristics.—Torticollis may be the earliest and for several weeks the only objective symptom.

Chief Signs.—See page 270.

Cerebellar Tumor.—*Characteristics.*—When the growth is in the lateral lobe the attitude of the head is often striking. When standing or sitting it is generally tilted so that the occiput approximates to the shoulder on the side of the lesion, and the chin is deviated to the opposite side. The converse position does, however, sometimes occur.

Chief Signs.—See page 90.

Scars of the Neck.—*Characteristics.*—An extensive burn or laceration, in healing, may contract in such a way as to draw the head to one side.

Retropharyngeal Abscess (*Idiopathic*).—*Characteristics.*—Occasionally torticollis is an early symptom.

Chief Signs.—See page 247.

Hematoma of the Sternomastoid Muscle.—*Characteristics.*—Mechanical torticollis occurs as a result of a hematoma beneath one sternomastoid muscle following traumatism.

Chief Signs.—History of contusion; presence of an acute tumefaction in the course of the muscle.

Cervical Rib.—*Characteristics.*—Sometimes torticollis occurs and is here probably the result of irritation of the nerves by the accessory rib when unilateral.

Chief Signs.—See page 271.

Less Common Causes.—Facial hemiatrophy; slipped tendon; subtentorial tumor; worms; strabismus; scoliosis; "hysteria"; tumor of the neck; acute inflammation of the suboccipital articulations; osteo-arthritis of the cervical spine; unilateral dislocation of a cervical vertebra.

TRACHEAL TUGGING

There is a downward movement of the trachea which is transmitted to the larynx, the depression of which is appreciated on palpation as a distinct tug synchronous with cardiac systole. Sometimes this indication of tracheal tugging is visible, as well as palpable, and, exceptionally, it has a diastolic rhythm. The sign is elicited by supporting and elevating the cricoid cartilage with the thumb and forefinger, the patient meanwhile closing the mouth and raising the chin, so as to stretch the trachea and keep it tense.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—Tracheal tugging, though presumptive evidence of aneurysm, especially of the transverse arch, is not absolutely distinctive, for a similar systolic depression of the windpipe is sometimes seen in other conditions, especially the two mentioned below.

Chief Signs.—See page 275.

Dilatation of the Aorta.—*Characteristics.*—Occasionally tracheal tugging may be elicited in simple dilatation of the aorta without aneurysm.

Chief Signs.—See page 275.

Mediastinal Tumor.—*Characteristics.*—Occasionally, when a tumor in the mediastinum or a mass produced by mediastinitis becomes adherent to the lower trachea and aortic arch simultaneously, the symptom may be elicited.

Chief Signs.—See page 264.

Less Common Causes.—Enlarged bronchial glands; enteroptosis; chronic pleurisy (with left pleural adhesions); chronic pulmonary tuberculosis (during inspiration, and not synchronous with the pulse); great cardiac hypertrophy.

SKIN AFFECTIONS OF THE NECK

Eczema.—*Characteristics.*—The papular form is the usual variety occurring on the neck. It may start with very small papules, chiefly situated around the hair follicles, or the papules may be larger, 2 to 4 mm. in diameter. At first well-defined and discrete, they usually soon coalesce. There is considerable redness and usually much scaling.

Chief Signs.—Intense itching; chronicity.

Boil (Furuncle).—*Characteristics.*—An area of deep induration and tenderness first manifests itself, soon becomes localized and approaches the surface to become a definite, red, painful, hot nodule. Fluctuation may then become evident and a central point of suppuration be seen. The skin may rupture, discharging pus and later a core of necrotic tissue; or the boil may resolve without pointing ("blind boil"). Several may occur on the back of the neck.

Carbuncle.—*Characteristics.*—These are similar to boils, except that they are more indurated, wider, and less circumscribed, and that the overlying skin eventually becomes softened in several places instead of one. At times the whole area becomes necrotic and sloughs. Usually one large carbuncle occurs on the back of the neck.

Chief Signs.—Chilliness, fever, headache; pain.

Acne Vulgaris.—*Characteristics.*—An aggregation of small pustules, papules, and comedones (blackheads) may be present on the back of the neck. The pustules usually rupture spontaneously with crust formation. Scarring may result.

Chief Signs.—Onset about the time of puberty; involvement of the sebaceous glands; chronicity.

Tinea Circinata (Ringworm).—*Characteristics.*—A small, red, slightly raised spot appears, gradually spreads at the edge and becomes scaly. It fades at the center as the circle enlarges, leaving a slightly discolored, brawny area which forms the inside of a red ring. In other cases the lesions appear as patches rather than as rings. There may be several lesions. Minute vesicles at the periphery may be seen.

Chief Signs.—May be itching and inflammation; presence of the microsporon or trichophyton.

Lichenification (Neurodermite).—*Characteristics.*—Changes may take place in the skin over the nape of the neck due to scratching. The involved area becomes darker in color and thickened, the normal lines being increased, producing flat, irregular papules, some of which have a faceted appearance. Moderate scaling occurs.

Chief Signs.—Occurrence in neurotic individuals; history of scratching; itching.

Dermatitis Papillaris Capillitii (Acne Keloid).—*Characteristics.*—The eruption appears at the back of the neck and lower part of the back of the scalp as a patch of hard papules associated with pustular folliculitis.

Chief Signs.—Occurrence in Negroes.

Pigmentary Syphilid of the Neck.—*Characteristics.*—It is observed on the anterolateral surface of the neck on both sides, and may extend down to the clavicles. The lesions occur as spots or variously sized patches with indistinct and indented borders. They also appear as a leukomelanoderma.

Chief Signs.—Onset in the secondary stage; long duration tending to disappear about the fifteenth month; frequency in women.

Scrofuloderma.—*Characteristics.*—This is most common about the glands of the neck. A tuberculous gland breaks down with the formation of a sinus leading to the skin, which becomes infected. There is usually considerable crusting, and when the crust is removed a ragged ulcer is seen.

Chief Signs.—Slow course with spontaneous healing and formation of a soft scar.

Less Common Causes.—Actinomycosis; seborrheic dermatitis of infants (sides of the neck); urticaria (dermographism); erythema multiforme; acanthosis nigricans; tinea versicolor; pityriasis rosea; carcinoma; dermatitis medicamentosa (drug rash).

THE UPPER EXTREMITY

SYMPTOMS	PAGE
Pain in the Shoulder.....	294
Swelling of the Shoulder.....	297
Elevation or Depression of the Shoulder.....	298
Swelling in the Axilla.....	299
Enlargement of the Axillary Glands (Axillary Adenopathy).....	300
Skin Affections of the Axilla.....	301
Pain in the Upper Extremity (One or Both).....	301
Edema of One or Both Upper Extremities	305
Paralysis of Whole or Part of One Upper Extremity (Brachial Monoplegia, Complete or Partial).....	306
Paralysis of Whole or Part of Both Upper Extremities (With or Without Paralysis of the Lower Extremities).....	311
Paralysis of the Upper and Lower Extremity on the Same Side (Hemiplegia)	314
Atrophy or Wasting of Whole or Part of One Upper Extremity.....	317
Atrophy or Wasting of Whole or Part of Both Upper Extremities.....	319
Swelling of the Elbow.....	321
Skin Affections of the Elbows and Knees.....	324
Swelling of the Wrist.....	324

Wrist-Drop	326
Pain in the Hand and Fingers	327
Swellings of the Hand and Fingers	330
Enlargement of the Hands	332
Deformities of the Hand	333
Numbness and Tingling in One or Both Upper Extremities	336
Skin Affections of the Forearms and Hands	338
Skin Affections of the Palms and Soles	340
Clubbed Fingers ("Hippocratic Fingers")	341
Gangrene of the Fingers or Hand	343
Deformities of the Fingers	345
Skin Affections of the Fingers	346
Abnormalities of the Finger-Nails (Onychosis)	347
Capillary Pulsation under the Nail	348
Skin Affections Involving the Finger-Nails	349
The Pulse	350
Irregular Pulse	352
Halving of the Pulse Rate	353
Inequality of the Pulses	354
Collapsing Pulse (Corrigan's Pulse)	354

See also "Swellings of the Soft Parts of the Extremity," page 614; "Swelling or Thickening of the Bones of the Extremity, page 615; "Brittle Bones," page 671; "Contractures," page 682; "Movements, Tremulous (Tremor)," page 748; "Movements, Athetoid," page 745; "Movements, Choreiform," page 746; "Tachycardia," page 443; and "Bradycardia," page 445.

PAIN IN THE SHOULDER

Patients may complain of pain in the shoulder or shoulders when careful inquiry shows that the pain has widely different situations; in one it may be mainly in the root of the neck or in the central clavicular region; in another, under the lower part of the blade of the scapula. If the pain is under the left shoulder-blade, its origin is likely to be gastric or intrathoracic; if mainly under the right shoulder-blade, duodenal or hepatic.

Subacromial Bursitis (*Subdeltoid Bursitis*).—*Characteristics*.—In the acute form there is pain on voluntary, but not on passive, abduction of the arm. The pain is referred to the insertion of the deltoid, and sometimes runs up into the neck, or down the arm, even to the hand. The pain is worse at night, and the patient may be unable to sleep on the affected side. The tenderness is located on

the point of the shoulder, just below the acromion and outside the bicipital groove, and owing to the bursa becoming entirely subacromial when the arm is abducted, may disappear when the limb assumes this position. This sign is almost pathognomonic.

Chief Signs.—May be history of injury, or not; voluntary abduction of the arm, at first free, later becoming modified by muscle spasm, locking the scapula to the humerus which it accompanies in its further excursion; may or may not be apparent swelling; persistence or intermittency of symptoms in subacute and chronic forms.

Fracture of the Upper Extremity of the Humerus (*Anatomical and Surgical Neck*).—*Characteristics.*—Pain in the shoulder exists in both these types of fracture, both spontaneous pain and pain on passive motion. In fractures of the surgical neck the pain may radiate downward into the fingers, from pressure on the brachial plexus.

Chief Signs.—History of violence, usually direct, to the shoulder; usually abnormal mobility and crepitus; interference with function; slight shortening; x-ray.

Acute Rheumatic Fever.—*Characteristics.*—The shoulder-joint may be involved in the characteristic acute pain and swelling which is seen in this disease. In the order of frequency of involvement the shoulder is preceded by the knee, ankle, wrist, and elbow.

Chief Signs.—Abrupt onset, with chill and involvement of the joints; flushed face; profuse sweats with sourish odor; sore-throat; pyrexia (101° – 103° F.), soft, rapid pulse (100–120); involvement of multiple joints, with pain, swelling, heat and tenderness, with tendency to quickly wander from joint to joint; leukocytosis; may be cardiac involvement (endo-, myo-, and pericarditis).

Brachial Neuralgia (*Brachialgia*).—*Characteristics.*—There is intense pain chiefly in the shoulder, but also extending down the arm to the tips of the fingers, usually the fore and middle fingers, always increased by movements of the arm. Most of the nerves are tender on pressure. In less acute cases the pain may be limited to the distribution of the circumflex nerve, to the bend of the elbow, or to the nerves about the wrist and palm of the hand. It is more frequently seen in the right arm and this gives rise to the impression at times that the patient has some form of professional “cramp” or neurosis, especially as there may be inability to write. In all cases of persistent brachial neuralgia the shoulder-joint should be carefully examined, as osteo-arthritic changes are not uncommonly found in association with it (see below).

Chief Signs.—See page 302.

Cholelithiasis (*Gall-Stone Colic*).—*Characteristics.*—The pain in gall-stone colic starts in the gall-bladder region (right hypochondrium), and in the epigastrium, and radiates widely, frequently extending into the back and right shoulder. The pain is excruciating and is accompanied by vomiting, sweating, and sometimes collapse.

Chief Signs.—See page 471.

Chronic Osteo-Arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics.*—The shoulder-joints may be involved as part of a general osteo-arthritis. At times the affection may be mono-articular and confined to this joint. The pain is variable in intensity, sometimes slight, and sometimes severe through-

out the disease. The pain is increased by movement and is worse in damp weather.

Chief Signs.—See page 737.

Dislocation of the Shoulder.—*Characteristics.*—In this, the most frequent of all dislocations, there is always pain of a sickening character following an injury, usually produced by a fall on the outstretched arm or hand.

Chief Signs.—Swelling, rigidity, ecchymosis, and loss of function; flattening of the shoulder and prominence of the acromion process; presence of a hard swelling in the situation abnormally occupied by the head of the bone; projection of the elbow and inability to bring it to the side of the body; increase in vertical measurement around the axilla; displacement shown by the x-ray.

Acute Suppurative Arthritis (*Septic Arthritis*).—*Characteristics.*—There is great pain, which may become excruciating, and tenderness and fixation of the joint, which is hot, swollen, and fluctuating, often red and edematous.

Chief Signs.—History of infected wound, pyemia, or severe acute infectious disease; acute onset with chilliness or chills with fever; severe constitutional symptoms of septic intoxication or septicemia; enlargement of the ends of the bones making up the joint, with later, “starting pains” and crepitus.

Acute Synovitis.—*Characteristics.*—There is a good deal of pain from the start, which increases as fluid accumulates in the synovial sac, bringing about a fixation of the joint by muscular contraction in the most comfortable position, that is, partial flexion, in which position there is more room for the fluid.

Chief Signs.—History of contusion, strain, or low-grade infection; tenderness; increased heat; hyperemia of the skin; increase in size of the affected shoulder, with swelling along the bicipital groove and in the axilla.

Chronic Synovitis.—*Characteristics.*—Pain is a variable symptom. The earliest symptom to attract notice is stiffness, observed particularly in forced movements, as in placing the hand on the head.

Chief Signs.—History of acute attack following an injury or not; may be slight fullness about the joint, increasing as time goes on; gradually increasing restriction of motion; atrophy of the deltoid and scapular muscles; negative x-ray.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—Involvement of the apical pleura rarely causes a sharp pain, but, as a rule, manifests itself by a sense of soreness or pain in the shoulder, which is often, therefore, regarded as rheumatic.

Chief Signs.—See page 357.

Less Common Causes.—Extramedullary tumors of the spinal cord, cervico-dorsal region (referred to the shoulder or breast); neoplasm of the shoulder region; cancer of the breast (with supraclavicular metastasis); myositis; fracture of the scapula; pleurisy; diaphragmatic pleurisy; lead poisoning; tumor of the spinal cord (upper dorsal region); habitual or recurrent dislocation of the shoulder; angina pectoris; aneurysm of the arch of the aorta; cervicodorsal pachymeningitis; colitis; tuberculosis of the shoulder-joint; “shoulder-joint disease” (pain is slight); fracture of the shaft of the clavicle; fibrositis; mycetoma; fracture of the coracoid process; sprain of the shoulder; dislocation of the outer end of the clavicle; supra-renal neoplasm; cancer of the liver; abscess of the liver; syringomyelia; subphrenic abscess; gonorrheal arthritis; herpes zoster; hemiplegia; Henoch’s purpura; ather-

oma of the aorta (syphilitic); pneumonia; gastric ulcer; gastric cancer; duodenal ulcer; peripheral neuritis; tumor in the posterior triangle of the neck; enlarged axillary glands; aneurysm of the subclavian artery; neuromata or fibro-neuromata of the brachial plexus; adiposa dolorosa; pulmonary infarction; actinomycosis of the lung; rupture of the spleen; perisplenitis; appendicitis; pressure of a drainage tube; tumor of the hypophysis; hiccup; pulmonary neoplasm; ruptured ectopic pregnancy; artificial pneumoperitoneum; intra-uterine oxygen insufflation; spurs on the clavicle; exostoses of the lower cervical vertebræ; calcified cervical glands.

SWELLING OF THE SHOULDER

Acute Synovitis.—*Characteristics.*—There is increase in size of the affected shoulder, with fluctuating swelling along the bicipital groove and in the axilla.

Chief Signs.—See page 296.

Acute Suppurative Arthritis.—*Characteristics.*—The shoulder is swollen, hot, red, painful, and fluctuating.

Chief Signs.—See page 296.

Dislocation of the Shoulder.—*Characteristics.*—In all varieties of dislocation of the shoulder there is swelling, accompanied by pain, rigidity, and loss of motion. There is a hard swelling felt in the situation abnormally occupied by the head of the bone.

Chief Signs.—See page 296.

Fracture of the Neck of the Humerus.—*Characteristics.*—In fracture of the anatomical neck particularly, there will be swelling of the joint and a certain amount of broadening of the neck of the bone demonstrable on palpation.

Chief Signs.—See page 295.

Sarcoma of the Upper End of the Humerus.—*Characteristics.*—There is symmetrical distention of that portion of bone nearest the joint. There may be some enlargement of the joint from synovitis. Later the whole shoulder and upper part of the arm may become greatly swollen.

Chief Signs.—See page 616.

Cancer of the Breast (With Metastasis to the Shoulder).—*Characteristics.*—Enlargement of the supraclavicular glands by extension, and brawny edema of the skin from obstruction of the lymphatics may both cause some or even great enlargement of the shoulder, in the latter instance accompanying swelling of the entire upper extremity.

Chief Signs.—Presence of mammary cancer or history of removal of a tumor of the breast; may be pain in the shoulder and arm; presence of supraclavicular and axillary lymphatic enlargement.

Charcot's Joint (Tabetic Arthropathy).—*Characteristics.*—The joint is swollen, markedly deformed, painless, and freely movable in any direction. Crepitus can be produced even without the patient's knowledge. The shoulder is not as often affected as the knee or hip.

Chief Signs.—See page 611.

Syngomyelia.—*Characteristics.*—Arthropathies similar to those seen in tabes

dorsalis may occur, usually in the upper limbs, affecting chiefly the shoulder, elbow, and interphalangeal joints. They are often the first symptoms of the disease.

Chief Signs.—See page 317.

Less Common Causes.—Chronic synovitis; fracture of the coracoid process; multiple myelomata; solitary bone cyst of the humerus; osteitis fibrosa cystica; osteitis fibrosa osteoplastica; osteoperiostitis; osteomyelitis; osteoma; lipoma; tuberculosis of the shoulder-joint; separation of the epiphysis; osteo-arthritis; Henoch's purpura.

ELEVATION OR DEPRESSION OF THE SHOULDER

Fracture of the Surgical Neck of the Scapula.—*Characteristics.*—There is flattening of the shoulder on the affected side, and therefore apparent depression.

Chief Signs.—History of injury; prominence of the acromion; lengthening of the arm from the acromion to the internal condyle; swelling in the axilla; crepitus on raising or rotating the arm; x-ray.

Fracture of the Clavicle.—*Characteristics.*—The shoulder with the outer fragment is displaced downward, inward, and forward, owing to the weight of the extremity and contraction of the subclavius and muscles of the axillary folds.

Chief Signs.—History of violence, usually indirect; general signs of fracture (local pain and tenderness, mobility, crepitus); x-ray.

Dislocation of the Shoulder (Subglenoid).—*Characteristics.*—Apparent depression or flattening of the shoulder is brought about by the escape of the head of the humerus downward out of the glenoid cavity.

Chief Signs.—See page 296.

Fracture of the Acromion Process.—*Characteristics.*—There is flattening of the shoulder.

Chief Signs.—History of direct violence; pain; loss of the power of abduction of the arm; abnormal mobility and crepitus obtained by pushing upward on the elbow; x-ray.

Scoliosis (Lateral Curvature of the Spine).—*Characteristics.*—The shoulder is raised on the side of the convexity of the spine. The most common dorsal curve is with the convexity to the right. The right shoulder is raised, the right scapula projects backward more prominently than the left, and the back below the scapula is more rounded backward on the right.

For causes of Scoliosis, see page 551.

Fibroid Phthisis.—*Characteristics.*—The chest is sunken and the shoulder lower on the affected side.

Chief Signs.—See page 361.

Chronic Adhesive Pleurisy (Following Empyema).—*Characteristics.*—In chronic cases, reëxpansion of the lung may be prevented by sclerotic changes and by the dense and thickened pleura. In these cases nature tries to obliterate the cavity by causing a hypertrophy of the opposite lung, and lateral curvature develops, with a sinking in of the chest and consequent depression of the shoulder.

Chief Signs.—See page 374.

Less Common Causes.—Dislocation of the acromial end of the clavicle (shoulder-joint passes down and in); sacro-iliac disease (shoulder raised); Sprengel's

deformity or congenital elevation of the scapula (shoulder raised); syringomyelia (shoulder raised); paralysis of the trapezius (shoulder lowered); chronic interstitial pneumonia (shoulder lowered).

SWELLING IN THE AXILLA

Enlarged Lymph Glands of the Axilla.—*Characteristics.*—The swellings are almost always multiple, and are situated in the part of the axilla where glands are normally present. Even if matted together (tuberculous adenitis) the mass may be felt to be made up of many glands.

For causes of Enlargement of the Axillary Glands, see page 300.

Acute Abscess.—*Characteristics.*—A superficial abscess, resulting from infected hair follicles or the breaking down of septic lymph glands (which may occur weeks after the original source of infection in the extremity has healed), forms a painful, fluctuating tumor in the axilla. If the infection starts in the hair follicles the skin is invariably reddened, and shows one or more pustules, or perhaps also sinuses if the abscess has already ruptured. The whole inflamed mass may be moved upon the deep axillary fascia. Infection from the hand affects the deeper glands of the axilla, so that an abscess of the latter may swell to a considerable extent before the skin shows any change; such an abscess is covered by the pectoral muscles, and any movement of the arm causes pain.

Chief Signs.—Constitutional symptoms; aspiration of pus.

Tuberculous Abscess (*Chronic Abscess*).—*Characteristics.*—There is a single, non-inflammatory, fluctuating swelling which, if large, may extend upward under the pectoralis major muscle.

Chief Signs.—Chronicity (months but not years); may be presence of tuberculosis elsewhere; aspiration of thick, curdy pus.

Sebaceous Cyst.—*Characteristics.*—The swelling is superficial, globular, and attached to the skin at one point.

Chief Signs.—Slow growth; may be softening with discharge of a sebaceous material, or aspiration of the same.

Lipoma.—*Characteristics.*—The tumor, while not common, may attain large size and extend up under the pectoral muscles. It is soft, almost fluctuating, has a definite outline, is freely movable, and the skin wrinkles when the attempt is made to raise it away from the tumor.

Chief Signs.—Slow growth (over a period of years); negative result on aspiration.

Aneurysm of the Axillary Artery.—*Characteristics.*—There is a comparatively superficial fluid swelling which gives an expansile pulsation synchronous with the heart beat.

Chief Signs.—May be history of local injury or evidence of infective endocarditis; may be delayed and diminished radial pulse; may be distended veins of the forearm (from pressure on the axillary vein); aspiration of fresh blood.

Less Common Causes.—Cystic hygroma; subglenoid or subcoracoid dislocation of the shoulder (head of the humerus felt in the axilla); fracture of the neck of the humerus; epiphyseal separation; synovitis; nevus; primary malignant tumor.

ENLARGEMENT OF THE AXILLARY GLANDS

(*Axillary Adenopathy*)

The axillary glands are ten to twelve in number, and are arranged in three sets. One chain, surrounding the axillary vessels, receives the lymphatics from the arm; a small chain runs along the lower border of the pectoralis major as far as the mammary glands and receives the lymphatics from the front of the chest and the breast; a third chain is located along the lower margin of the posterior wall (subscapular group) and receives lymphatics from the coverings of the back.

Infected Wound.—*Characteristics.*—Several of the lymph glands may become enlarged and tender as a result of septic absorption in the area drained by the glands affected. The sore might be in the fingers, hand, forearm, arm, breast, shoulder, or upper back. The focus causing the adenitis is in many cases a small one, a common cause being inflammation about a hangnail.

Chief Signs.—Discovery of the focus of infection; fever; may be lymphangitis leading from the sore.

Carcinoma of the Breast.—*Characteristics.*—Glandular carcinoma in the axilla soon follows the appearance of a scirrhus cancer of the breast, although there may be no palpable enlargement for a considerable time. The glands become rather large, are often matted and conglomerated, are very hard and adherent, and appear first beneath the pectoral margin, later in the apex and whole extent of the axilla. Enlargement of the glands in the posterior cervical triangle above the clavicle and in the mediastinum may follow. The arm may be swollen from obstruction to the lymph-flow or pressure upon the vein. Occasionally it is the glands of the opposite axilla which are affected.

Chief Signs.—See page 384.

Tuberculous Adenitis.—*Characteristics.*—A mass or masses of matted lymph glands adherent to an indurated skin, possibly with sinuses, is present, usually, however, with a similar condition of the cervical glands. If much fibrous tissue is formed the glands may be more discrete but the whole mass of larger size.

Chief Signs.—See page 284.

Hodgkin's Disease (*Lymphadenoma*).—*Characteristics.*—The axillary glands are often involved and may attain a large size, though usually such involvement appears after a similar swelling in the neck of the same or opposite side. Both axillæ may be affected. The individual glands remain distinct from one another, do not tend to break down or suppurate, and do not become fixed either to the skin or to the deeper parts.

Chief Signs.—See page 285.

Tularemia.—*Characteristics.*—The glands of the axilla are most frequently involved because of the greater incidence of infection from a wound of the hand acquired while cleaning infected rabbits. The glands become enlarged and tender within forty-eight hours after infection. Months later they may suppurate. The original wound may be insignificant and heals rapidly.

Chief Signs.—History of cleansing rabbits; sudden onset with chills and fever; continuous remittent fever for two or three weeks; slow convalescence; blood serum agglutination test (for *Pasteurella tularensis*).

Less Common Causes.—Syphilis; lymphatic leukemia; diphtheria; ecthyma; erysipelas; glandular fever; pertussis; measles; mumps; German measles; secondary sarcoma; scarlet fever; chickenpox; Still's disease; bubonic plague; carcinoma of the bone; lymphosarcoma; symmetrical adenolipomatosis.

SKIN AFFECTIONS OF THE AXILLA

Intertrigo (*Chafing*).—*Characteristics.*—Intertrigo of the axillary folds is sometimes seen in nurslings, usually in conjunction with other flexor surface chafings, particularly the groin. The appearance of the skin varies from hyperemia to actual inflammation, and may pass over into eczema. In adults there may be a similar condition, but it is not as common here as on the inner surfaces of the thighs and beneath the breasts. There is diffuse redness, moisture, and a feeling of soreness and burning. If it continues the skin may become macerated and an actual dermatitis may ensue.

Eczema.—*Characteristics.*—The axilla is one of the points of predilection for papular eczema. Small papules appear, chiefly around the hair follicles, being at first discrete but soon coalescing. The papules are red and some may be surmounted by minute vesicles. There is usually considerable scaling. It is more marked when there is most perspiring.

Chief Signs.—Intense itching; chronicity.

Scabies (*Itch*).—*Characteristics.*—The axilla is one of the points of predilection for this disease. Vesicles and pustules are not so common in this locality as in some others, and the principal lesions found are those of scratching produced by the nails, resulting in vertical parallel lines. It is rare to find an intact burrow.

Chief Signs.—History of contagion; intense itching; presence of typical lesions on the wrists, between the fingers, on the inner surfaces of the thighs and genitals (vesicles, pustules, burrows).

Tinea Circinata (*Ringworm*).—*Characteristics.*—When ringworm affects the axilla it usually appears as round red areas about 3 to 5 cm. in diameter, with reddish vesiculopustular borders. These become fused into large polycyclic plaques. It is often symmetrical, bilateral, and tends to be chronic. There is comparatively little functional disturbance.

Chief Signs.—Presence of the tinea parasite.

Acanthosis Nigricans.—*Characteristics.*—The disease begins and is most marked in the axillary and inguinal regions. There is hyperpigmentation varying from dirty yellow to deep brown and some papillomatous cutaneous hypertrophy.

Chief Signs.—Association in adults of abdominal malignancy.

Less Common Causes.—Trichomycosis; keratosis follicularis (Darier's disease); tinea cruris erythrosum; pediculosis; impetigo, furunculosis; neurodermite.

PAIN IN THE UPPER EXTREMITY

(*One or Both*)

(See also "Pain in the Shoulder," page 294, "Swelling of the Elbow," page 321, "Swelling of the Wrist," page 324, and "Pain in the Hand and Fingers," page 327.)

Wounds, burns and bruises are obvious causes of pain.

Brachial Neuralgia.—*Characteristics.*—Complaint is made of intense pain, chiefly in the shoulder but also extending down the arm to the tip of the fingers, usually of the forefinger and little finger. Sometimes the pain is limited to the distribution of one or two nerves, as the ulnar, radial, or internal cutaneous. The character of the pain varies, but in true neuralgia it is paroxysmal, sometimes dull, boring, or burning, at other times sharp and lancinating. The duration of the attack varies from a few seconds to several minutes, and their frequency from two or three times daily to several in an hour. When severe, there is often cutaneous hyperesthesia. Exertion, cold, or mental worry may excite exacerbations. The pain is always increased by movements of the arm.

Chief Signs.—May be history of some preceding toxic condition or unusual worry; may be evidence of rheumatic or gouty diathesis or pressure on the brachial plexus; tender points along the nerves; paresthesias (numbness); may be vasomotor symptoms (flushing, sweating).

Brachial Neuritis.—*Characteristics.*—While it is difficult to draw a sharp line between neuralgia and neuritis the attempt is made to do so. The pain is constant rather than paroxysmal and is one of a boring or stabbing character. The nerves and brachial plexus are sensitive to pressure throughout. The nerve cords may be felt to be swollen and firm.

Chief Signs.—May be focus of infection (teeth, tonsils, sinuses, gall-bladder, prostate, etc.); may be history of cold, traumatism of the nerves, diabetes, etc.; numbness, formication, impaired sensation; trophic disturbances (herpes, joint effusions); vasomotor symptoms (redness or even edema of the skin); may be twitchings or contractions; muscular atrophy, paralysis, anesthesia in severe cases; altered electrical reactions.

Multiple Neuritis (Peripheral Neuritis).—*Characteristics.*—Both brachial plexuses may be involved as part of a general peripheral neuritis. The painful forms are the alcoholic, diabetic, and arsenical. The pains may, however, be felt only in the hands. The lower extremities are also usually involved.

Chief Signs.—See page 311.

Angina Pectoris.—*Characteristics.*—In the typical severe case, during exertion or intense mental emotion the patient is seized with an agonizing pain in the region of the heart and a sense of constriction, and the pains commonly radiate upward to the neck and down the inner side of the left arm (occasionally the right) to the little and ring fingers. The pains may begin in the left arm and sometimes remain there.

Chief Signs.—Occurrence usually in middle-aged males; paroxysmal nature; pallor and a sense of impending death; association with exertion or emotion; constrained breathing; cold sweats; duration, a few seconds to two minutes; high blood-pressure.

Pseudo-Angina.—*Characteristics.*—The pain lasts longer than that of true angina pectoris and is usually confined to the precordia, but may radiate to the arm.

Chief Signs.—Occurrence usually in women of any age; often periodical and nocturnal; great restlessness and emotional disturbance; relief after antineuralgic medication.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—Frequently the pain

radiates down the left arm. Anginal attacks are not uncommon, particularly in aneurysms at the root of the aorta.

Chief Signs.—See page 275.

Fracture of the Humerus, Radius, or Ulna.—*Characteristics.*—Pain is severe at the time of the injury, but may be insignificant in pathological fractures. It is increased by the slightest movement of the fragments. Its situation depends on the site of the fracture.

Chief Signs.—History of injury; swelling; ecchymosis; loss of function; muscular spasm; deformity; preternatural mobility; crepitus; x-ray.

Acute Osteomyelitis of the Humerus or Radius.—*Characteristics.*—The upper end of the humerus and the lower end of the radius are favorite sites for this affection. There is intense pain and tenderness of the part.

Chief Signs.—History of septic wound, boils, injury, or infectious disease; sudden onset with chill and high fever; swelling (involving the bone), edema, and heat, with distention of the superficial vessels; may be fluctuation; leukocytosis; x-ray.

Local Infection (*Cellulitis; Abscess; Lymphangitis; Erysipelas, etc.*).—*Characteristics.*—There is intense pain, great swelling and edema, dusky redness, and elevation of the local temperature (cellulitis). The lymphatic vessels may appear as tense, red, and tender lines running up the arm (lymphangitis). There may be fluctuation (abscess). In erysipelas the skin is hot and tense and the margins of the swelling abrupt and sharply defined.

Chief Signs.—Presence of an angry wound or scratch; axillary adenitis; chills, fever, sweats; leukocytosis.

Myalgia (*Myositis; Fibrositis; Muscular Rheumatism*).—*Characteristics.*—The affected muscles are painful; this pain may vary from a dull ache to a sharp, severe, and cramplike pain. It may be constant or occur only when the muscles are drawn into certain positions. Pressure on the affected part usually gives relief, though the muscles are often tender and may be indurated.

Chief Signs.—History of exposure to wet, cold, or draughts of air; may be history of strain; sudden onset; absent or only slight constitutional symptoms; duration, a few days to weeks; recurrences common.

Occupation Neurosis.—*Characteristics.*—The upper extremity is the common site of writer's cramp, typist's cramp, and other occupational cramps. The affection consists of muscular spasms often attended with cramplike pains and incoordination of the muscles. The acute pain associated with the spasm may be followed by a dull aching for some hours after the occupation has been indulged in.

Chief Signs.—See page 330.

Osteosarcoma.—*Characteristics.*—Sarcoma of the bones of the upper extremity is most common in the upper end of the humerus and in the upper and lower ends of the radius and ulna. The shaft is rarely affected in the middle third. The most constant symptom, especially of the central or myelogenous type of tumor, is localized pain of a persistent, dull, boring character, not relieved by fixation.

Chief Signs.—See page 616.

Tumor of the Spinal Cord (*Cervicodorsal region*).—*Characteristics.*—Tumors of the spinal membranes (extramedullary) located high up often cause pain radiating down the nerve roots of the arms. They are sometimes of a dull aching char-

acter, at other times sharp and shooting or even agonizing. These pains may precede motor disturbances for an indefinite period. The severity may be increased by laughing, sneezing, coughing, or straining.

Chief Signs.—Progressive paralysis of the forearm and hand (often unilateral at first), early spastic, later atrophic; sensory impairment along the ulnar side of the hand and arm; may be cyanosis and swelling of the arm; spasticity and impairment or loss of sensation below the lesion; extensor plantar reflex and positive Babinski; may be typical or atypical Brown-Sequard syndrome; bulbar symptoms; x-ray.

Progressive Muscular Atrophy.—*Characteristics.*—Irregular pains in the arms may precede the wasting. After extensive atrophy has occurred complaint may be made of dull aching pain in the limbs and a subjective sensation of “fluttering” under the skin.

Chief Signs.—See page 319.

Amyotrophic Lateral Sclerosis.—*Characteristics.*—As in progressive muscular atrophy (see above).

Chief Signs.—See page 319.

Syringomyelia (Spinal Gliosis).—*Characteristics.*—Pains radiating down the arms or up the neck may be an early symptom, but numbness and a feeling of deadness are the most frequent subjective symptoms.

Chief Signs.—See page 317.

Tuberculosis of the Cervical Vertebrae (Spinal Caries; Pott's Disease).—*Characteristics.*—Cord symptoms are frequently absent. In some cases, however, there is pain referred to the arms, associated with headache and sympathetic pupillary changes. When present the pains are either dull and constant or sharp and radiating. They are sometimes an early symptom and may be present before the symptoms of the bone disease are apparent.

Chief Signs.—See page 270.

Hypertrophic Cervical Pachymeningitis.—*Characteristics.*—Intense neuralgic pains in the course of the nerves of the arms and in the neck occur, and may be associated with hyperesthesia and later with loss of sensation. The pain may persist for months and is followed by atrophic paralysis of the hand and forearm.

Chief Signs.—See page 320.

Cervical Rib.—*Characteristics.*—Subjective sensations of pain in the arm or arms, often of a severe character, with numbness and tingling, may occur as a result of pressure of the accessory rib on the lower trunk of the brachial plexus.

Chief Signs.—See page 271.

Carcinoma of the Vertebrae (Cervicodorsal Region.)—*Characteristics.*—Root pains of an intensely excruciating character may occur early and radiate down the arm. Although induced by movement, they are often entirely spontaneous in origin. They are usually unilateral, and may be associated with a definite zone of hyperesthesia over the area of distribution of the affected nerve or nerves.

Chief Signs.—See page 541.

Tabes Dorsalis (Locomotor Ataxia).—*Characteristics.*—“Lightning pains,” though more common in the lower extremities, may occur in the upper. They are sharp, abrupt, and fulgurant, sometimes occurring singly, at other times grouped in paroxysmal attacks of varying duration (from one to several days). They are

felt more particularly along the inner border of the forearm and the fourth and fifth fingers.

Chief Signs.—See page 104.

Periarthritis of the Shoulder.—*Characteristics.*—There is a more or less constant aching in the arm and often in the forearm and hand, associated usually with some tenderness of the muscles of the shoulder. Often there is no pain in the shoulder itself. The condition is usually unilateral, sometimes bilateral. These cases are often diagnosed neuritis.

Chief Signs.—Insidious onset; chronicity; limitation of movement; negative x-ray, or an associated arthritis.

Leprosy.—*Characteristics.*—Pains in the limbs with areas of hyperesthesia or numbness occur early in the anesthetic form. The pain, of neuralgic type, is constant and spontaneous, with repeated violent paroxysms.

Chief Signs.—See page 51.

Less Common Causes.—Rupture of the biceps muscle; acute aortitis; syphilitic aortitis (due to angina pectoris); tumor in the posterior triangle of the neck; enlarged axillary glands; neuromata; aneurysm of the subclavian or axillary artery; adiposis dolorosa; paralysis agitans; psychalgia; trichiniasis; dengue; influenza; rickets; syphilis; infantile scurvy; chronic endocarditis; atonic dyspepsia; splenomegaly; coronary thrombosis; Morvan's disease; mediastinal tumor; dilatation of the aorta; pericarditis with effusion; enlarged bronchial glands; hemiplegia dolorosa.

EDEMA OF ONE OR BOTH UPPER EXTREMITIES

Edema of the arms may be part of a general edema (see Anascarca, page 659). The arms of stout women near the menopause frequently become edematous without organic cause. Compression of the axillary veins by the dress may cause this condition.

Cellulitis (*With Lymphangitis*).—*Characteristics.*—There is a diffuse swelling of the skin and deeper soft tissues of an inflammatory nature. The whole hand and forearm may be edematous, and red lines due to inflammation of the lymphatics seen coursing up the forearm.

Chief Signs.—See page 328.

Erysipelas.—*Characteristics.*—This form of dermatitis is marked by an area of inflammation with edema, redness, tenderness, pain, and a constant daily extension of the involved area. It spreads rapidly, often as much as an inch a day and more rapidly in the direction of the lymph current than against it. The symptoms are less severe when the erysipelas occurs on an extremity than when the face is involved.

Chief Signs.—See page 328.

Mediastinal Tumor.—*Characteristics.*—Occlusion of the intrathoracic venous trunks, especially in tumors located in the anterior and superior mediastinum, accounts for edema and for distention and tortuosity of the superficial veins of the face, neck, arms, and upper anterior chest-wall, bilateral phenomena of this sort indicating superior caval obstruction, and unilateral signs pointing to compression of an innominate vein or one of its tributaries.

Chief Signs.—See page 264.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—An aneurysm of the ascending or transverse arches occasionally exerts sufficient pressure on the superior vena cava to cause edema of the arms and engorgement of the vessels of the head; sometimes it compresses only one innominate or subclavian vein, producing edema of one arm only.

Chief Signs.—See page 275.

Carcinoma of the Breast.—*Characteristics.*—When metastasis takes place in the axillary glands the enlargement may cause sufficient pressure on the axillary vein to lead to edema of the arm, or the lymph-flow may be obstructed and cause a lymphedema (non-pitting edema).

Chief Signs.—See page 384.

Less Common Causes.—Urticaria; stings; myositis; trichiniasis; aneurysm of the innominate artery; aneurysm of the axillary artery; axillary abscess; cervical rib; "hysterical" edema; mediastinitis; mycetoma; periphlebitis; thrombophlebitis; angioneurotic edema; Raynaud's disease; Hodgkin's disease (axillary vein compression); hemiplegia; syringomyelia (the succulent hand).

PARALYSIS OF WHOLE OR PART OF ONE UPPER EXTREMITY

(*Brachial Monoplegia, Complete or Partial*)

The term "paralysis" as used here and elsewhere in this volume includes partial palsy (paresis) or complete loss of motor power. Care must be taken to differentiate between subjective weakness and true muscular weakness by testing the movements of the muscles against resistance; and incoördination, as loss of control of finger movements, should not be confused with paresis. In some cases pain in a muscle or joint inhibits attempts at movement, and ankylosis of the shoulder-joint prevents lifting of the arm, conditions which may be described by the patient as loss of power. Paralysis of one arm (brachial monoplegia) is rarely due to a spinal lesion, but is almost always caused either by a cerebral lesion or by neuritis of the nerves supplying the arm; when cerebral, the lesion is almost always cortical.

Cerebral Thrombosis (*Softening*).—*Characteristics.*—A brachial monoplegia may occur, though usually there is also some weakness of the corresponding leg. The muscles are usually more paralyzed in the distal than in the proximal portion of the limb. The paralysis is at first flaccid and later spastic. Some degree of sensory disturbance, more marked at the periphery of the limb, is usually present, but ordinarily it disappears rapidly. Some atrophy may develop due to disuse. The paralysis may affect the whole limb with inability to shrug the shoulder; or the movements of the hand and fingers may be more impaired than those of the elbow and shoulder. Eventually contractures may develop.

Chief Signs.—Occurrence in aged arteriosclerotics; premonitory symptoms; gradual onset (may begin in the hand); usually no loss of consciousness; may be slight paresis of the facial muscles, absence of the abdominal reflexes, increased knee-jerk, ankle-clonus and positive Babinski, all on the side of the monoplegia; relatively low blood-pressure.

Cerebral Syphilis.—*Characteristics.*—Brachial monoplegia may occur similar to that described above, but its duration is usually transient. This condition is per-

haps most common in syphilitic meningitis of the convexity rather than in other types of cerebral syphilis.

Chief Signs.—See page 315.

Cerebral Tumor.—*Characteristics.*—Progressive monoplegia or hemiplegia of the opposite side of the body is found in all cases of precentral tumor, the arm being paralyzed if the tumor involves the cortical center of that limb only. The palsy may be observed after a fit (Jacksonian), or series of fits, and although at first transient soon becomes permanent and progressive, spreading from one part of the limb to another. The limb remains spastic. If the growth is subcortical rapid wasting may occur.

Chief Signs.—See page 89.

Tuberculous Meningitis.—*Characteristics.*—Brachial monoplegia may occur, often associated with aphasia. This is probably due to a localized meningo-encephalitis.

Chief Signs.—See page 89.

Uremia.—*Characteristics.*—Monoplegia, as well as hemiplegia, may come on spontaneously or after a convulsion, due to localized cortical edema. These cases may simulate any form of organic paralysis of cerebral origin.

Chief Signs.—See page 316.

Cerebral Arteriosclerosis (*Middle Cerebral Artery*).—*Characteristics.*—Recurring transient attacks of monoplegia of the upper motor neuron type may occur from localized transient angiospasm, as well as transient attacks of hemiplegia and paralysis.

Chief Signs.—Advanced age; presence of general arteriosclerosis (though not necessarily); tendency to fatigue; insomnia; faulty memory, speech defects, uncertain gait; transient attacks of aphasia; vertigo, simple or associated with Stokes-Adams syndrome; cardiac and renal symptoms; claudication.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—Spastic paralysis of one arm of rapid onset is occasionally the first symptom, when perhaps there may be only absent abdominal reflexes and a positive Babinski. In some cases such a monoplegia occurs late in the disease.

Chief Signs.—See page 94.

Syringomyelia (*Spinal Gliosis*).—*Characteristics.*—A weak, wasted, or completely paralyzed arm or part of a hand and arm is a common finding. The hand and fingers are clawlike, the whole extremity cyanotic and cold. These are early signs. There is a diminution of excitability to both forms of electrical current. The weakness precedes the visible wasting by one to four years.

Chief Signs.—See page 317.

Paralysis Agitans (*Parkinson's Disease; Shaking Palsy*).—*Characteristics.*—The first complaint is sometimes loss of power in one arm. The limb is actually weaker than its fellow, and is also somewhat stiff and conspicuously slow in carrying out movements.

Chief Signs.—See page 41.

Occupation Neurosis.—*Characteristics.*—The muscles primarily affected are those subjected to severe and prolonged strain, as in holding an object such as a pen, or in forcible contraction as occurs in the piano-player or the violinist. There is no actual paralysis, rather a painful subjective weakness and incoördination.

Chief Signs.—See page 330.

Tumor of the Spinal Cord (*Extramedullary*).—*Characteristics.*—A tumor of the meninges in the cervicodorsal region may cause weakness of the forearm and hand, either spastic in character from pressure upon the cord, or atrophic and flaccid from pressure upon the emerging roots. Sensory impairment will be present along the ulnar side of the hand and arm as far up as a line joining the anterior and upper margins of the axillary folds. Symptoms of irritation or paralysis of the cervical sympathetic will be seen. Below the lesion there will also be spastic paralysis and impairment or loss of sensation. The deep reflexes are increased, the plantars, extensor, and the superficial abdominal reflexes are diminished or lost. The other arm may later be affected.

Chief Signs.—See page 303.

Hematomyelia (*Hemorrhage into the Spinal Cord*).—*Characteristics.*—There may be a Klumpke type of paralysis of one arm when the hemorrhage is limited to one-half of the spinal cord in the cervical region. The motor palsy is at first of the flaccid type with abolition of the deep reflexes; later spasticity develops, the deep reflexes returning. The “preacher’s” hand develops.

Chief Signs.—Often history of injury to the neck; sudden onset; root pains rarely severe; consciousness usually retained; dissociated anesthesia; oculopupillary changes on the side of the lesion; spasticity of the corresponding leg; absence of constitutional symptoms.

Neurosis (“*Hysteria*”).—*Characteristics.*—Brachial monoplegia may occur. The muscles may be markedly rigid or the whole limb flaccid and limp. There may be even marked muscular wasting and claw-hand. The electrical reactions are unchanged and the reflexes universally unaltered. There may be the “glove” type of anesthesia. If the limb is rigid, steady pressure will overcome the rigidity and the arm may be extended. Voluntary effort to perform a certain movement throws the antagonistic muscles into action as well as those necessary for the act. Even when no voluntary movement whatever can be carried out by the fingers, they later may move involuntarily in association with energetic movements in the opposite limb. Unlike paralysis due to organic lesions, functional paralysis never attacks a single muscle nor the muscles supplied by a single nerve, and while the position of the paralyzed limb may roughly resemble the posture of an organic paralysis, it never does so with accuracy. The whole scapula may be displaced downward; in organic monoplegia the arm is displaced downward from the shoulder-joint.

Chief Signs.—See page 316.

Acute Chorea (*Sydenham’s Chorea; St. Vitus’ Dance*).—*Characteristics.*—The first complaint may be loss of use of an arm. The limb is actually weaker, as demonstrated by the fact that the child is unable to maintain a steady pressure. When the arm is extended in front with the palm downward, the wrist is slightly flexed although the fingers are extended.

Chief Signs.—See page 45.

Complete Lesion of the Brachial Plexus.—*Characteristics.*—When the whole plexus is damaged complete brachial paralysis results, with atrophy of the muscles and extensive sensory loss. The arm may hang from the body like a flail.

Chief Signs.—Presence of a tumor compressing the nerve trunks, or history of injury in the shoulder region (blow, wound, fracture, dislocation); reaction of

degeneration; may be gradual improvement with residual paralysis of upper or lower arm type; loss of sensibility over the whole of the forearm and hand and the outer side of the upper arm, the inner side and tip of the shoulder remaining sensitive; usually paralysis of the sympathetic.

Acute Anterior Poliomyelitis (*Infantile Paralysis*).—*Characteristics*.—When the permanent paralysis resides in the arm, there is more liability on the part of the shoulder and upper arm muscles to suffer than those of the forearm and hand. Muscles acting functionally together, with centers near each other in the spinal cord, are paralyzed together. The affected limb shows less development as the patient grows older. The reaction of degeneration is present in the affected muscles. Early in the course the muscles lose their faradic response. A single arm is relatively rarely affected.

Chief Signs.—See page 628.

Musculospiral Paralysis (*Radial Paralysis*).—*Characteristics*.—The most characteristic feature is the wrist-drop and the inability to extend the first phalanges of the fingers and thumb. The movements of supination may also be impossible. The sensations may be impaired, or there may be marked tingling.

Chief Signs.—History of injury (bruising by a crutch, blow, fracture), or history of sleeping on the arm, or exposure to cold or lead poisoning.

Duchenne-Erb Palsy (*Upper-Arm Type*).—*Characteristics*.—The arm hangs at the side, rotated inward. Abduction of the arm, flexion of the elbow, and supination of the hand are lost. The muscles paralyzed are the deltoid, biceps, brachialis anticus, supinator longus, and sometimes the supra- and infraspinatus; these become atrophied. In severe cases there may be anesthesia of the outer surface of the arm, in the region supplied by the circumflex and external cutaneous nerves.

Chief Signs.—History of difficult labor and occurrence from birth (obstetrical palsy), or history of a fall on the shoulder.

Klumpke's Paralysis (*Lower-Arm Type*).—*Characteristics*.—The flexors of the wrist and the intrinsic muscles of the hand undergo atrophy; the patient is unable to use his fingers. There is anesthesia of the ulnar border of the forearm and hand from the elbow downward. Claw-hand may develop.

Chief Signs.—Usually history of compression of the shoulder or previous extensive paralysis of the brachial plexus; may be contracted pupils, narrowed palpebral fissure, and slight enophthalmos on the side of the lesion.

Circumflex Nerve Paralysis.—*Characteristics*.—The arm cannot be raised nor rotated outward. The joint may be relaxed, and there may be a distinct space between the head of the humerus and the acromion.

Chief Signs.—History of injury (bruising by a crutch, dislocation); or extension of inflammation from the joint; wasting over the shoulder; pain often severe and sensation impaired over the shoulder; may be joint adhesions in chronic cases.

Ulnar Nerve Paralysis.—*Characteristics*.—The hand moves toward the radial side; adduction of the thumb is impossible; the first phalanges cannot be flexed, and the others cannot be extended. In long-standing cases the first phalanges are overextended and the others are strongly flexed, producing the claw-hand. There may be anesthesia of the ulnar side of the hand (two and a half fingers on the back, and one and a half fingers on the front). This nerve is always affected in leprosy.

Chief Signs.—History of pressure at the elbow joint, wound, or acute illness.

Cervical Rib.—*Characteristics.*—In some cases there is marked pressure upon the brachial plexus, resulting in partial paralysis and wasting of the intrinsic muscles of the hand and flexors of the wrist and fingers. There may be anesthesia or hyperesthesia of the inner aspect of the arm and ulnar half of the hand. There may be also pain extending along the ulnar border of the forearm to the wrist and fingers. While usually bilateral, the cervical rib may be much longer on one side than on the other.

Chief Signs.—See page 271.

Suprascapular Nerve Paralysis.—*Characteristics.*—There is flattening of the infraspinatus fossa and weakness in rotating the humerus outwards against resistance. The infraspinatus muscle may show the reaction of degeneration, but the supraspinatus muscle, affected likewise, is inaccessible, being covered by the trapezius. There may be complaint of difficulty or fatigue in writing.

Chief Signs.—History of injury or infection.

Paralysis of the Serratus Magnus Muscle (*Long Thoracic Nerve Paralysis*).—*Characteristics.*—The paralysis is confined to the shoulder; the arm cannot, as a rule, be raised above the horizontal. Isolated serratus paralysis is rare. There is little or no deformity with the arm hanging by the side. The shoulder is at a lower level, the inferior angle of the scapula projects upward, and when the arm is held out in front at right angles to the body, the scapula becomes winged and stands out prominently.

Chief Signs.—History of direct pressure, or neuritis following an acute infection or exposure.

Median Nerve Paralysis.—*Characteristics.*—This nerve is seldom involved alone. There is inability to pronate the forearm beyond the midposition; the wrist can be flexed only toward the ulnar side; the thumb cannot be apposed to the tips of the fingers; the second phalanges cannot be flexed on the first; the distal phalanges of the first and second fingers cannot be flexed, but in the third and fourth fingers this action can be performed by the ulnar half of the flexor profundus. There is loss of sensation of the radial side of the palm and the front of the thumb, the first two fingers and half of the third finger, and the dorsal surfaces of the same three fingers. The wasting of the thumb muscles, which is usually marked, gives the characteristic appearance.

Chief Signs.—History of wound on the palmar surface of the wrist, of the forearm, or arm; may be occupation neurosis.

Ischemic Paralysis (*Volkman's Contracture*).—*Characteristics.*—There is rigid contracture of all of the flexor tendons of the wrist and fingers with wasting of the muscles and other trophic changes. The electrical excitability of the flexor muscles is sometimes impaired.

Chief Signs.—History of wearing a tight splint or bandage on the forearm.

Less Common Causes.—Abscess of the brain (traumatic); amyotrophic lateral sclerosis (first unilateral); progressive muscular atrophy (first unilateral); acute encephalitis; encephalitis lethargica; polioencephalitis; cervical pachymeningitis; cerebral embolism; carcinoma of the vertebræ; cervical caries; fractured clavicle; cervical myelitis; diphtheritic paralysis; Morvan's disease; muscular dystrophy; Tooth's paralysis; axillary aneurysm.

PARALYSIS OF WHOLE OR PART OF BOTH UPPER EXTREMITIES*(With or Without Paralysis of the Lower Extremities)*

Paralysis of both upper extremities alone is rare compared to paralysis of both lower extremities (paraplegia).

Chronic Lead Poisoning.—*Characteristics.*—Paralysis and atrophy of the muscles of the arms is common, and may be general or local, involving the extensors of the wrist (wrist-drop), the scapulohumeral group, or the small muscles of the hands. The reaction of degeneration is marked.

Chief Signs.—See page 326.

Alcoholic Neuritis.—*Characteristics.*—There is weakness first seen in the distal portions of the extremities, especially in the dorsiflexors of the feet and the extensors of the wrist and fingers. The toes catch the ground in walking, and step-page gait, drop-foot, and drop-wrist are characteristic. The degree of weakness may be out of all proportion to the discernible muscular atrophy, although in some cases an early rapid muscular wasting occurs, the muscles becoming flabby, hyperesthetic, and losing their myotatic irritability.

Chief Signs.—Occurrence commoner in women, usually between thirty and forty years of age; history of chronic tipling; gradual onset; tingling in the feet and hands; tenderness of the muscles of the calves; loss of deep reflexes; may be mental changes (Korsakow's syndrome).

Arsenical Neuritis.—*Characteristics.*—The earliest symptoms are paresthesia and pains in the limbs, to which paralysis and ataxia are superadded. There is usually marked loss of motor power before wasting ensues. The palsy is commonest in the legs, bilateral and symmetrical, affecting the arms later (opposite of alcoholic neuritis). The result is eventually foot-drop and wrist-drop, often of a marked and persistent kind.

Chief Signs.—History of exposure to arsenic in industry or otherwise; may be talipes and contractures; may be rapid wasting; excessive hyperesthesia of the muscles of the arms and legs; may be pigmentary discoloration around the neck and abdomen; may be dark brown mottled skin but the mucous membranes never discolored as in Addison's disease.

Diabetic Neuritis.—*Characteristics.*—Almost invariably the legs are more affected than the arms.

Chief Signs.—Presence of glycosuria, hyperglycemia, and other symptoms of diabetes; involvement in the early stages of the external popliteal nerve; weakness of the legs and ataxia; drop-foot in the later stages; abolition of the ankle-jerks with knee-jerks retained, diminished, or lost; loss of the sense of vibration; may be perforating ulcer or gangrene of the foot.

Fracture-Dislocation of the Cervical Vertebrae (*Compression Myelitis*).—*Characteristics.*—A total lesion at or above the third cervical segment is usually immediately fatal. Complete anatomical severance of the cord just below this level causes complete motor and sensory paralysis with abolition of all the reflexes and retention of urine; if just below the level of the fifth cervical region, the muscles of the shoulder and upper arm are paralyzed, the upper extremities assuming a characteristic position, abduction and external rotation of the arm with flexion and

supination of the forearm. If below the seventh cervical, the flexors of the wrist and intrinsic muscles of the hand are the only muscles of the upper limbs paralyzed. Incomplete destruction may be diagnosticated when there is incomplete paralysis, partial anesthesia, and retention of the reflexes in the parts supplied by the cord below the injury; not infrequently, however, the symptoms will be identical, sometimes for several days or longer, with those of a total transverse lesion.

Chief Signs.—History of severe direct or more infrequently indirect injury to the cervical spine (neck); shock; local evidences of fracture (pain, swelling, tenderness, deformity, crepitus); priapism; may be optic neuritis; x-ray.

Infantile Diplegia (*Cerebral Diplegia; Little's Disease*).—*Characteristics.*—A few days after the onset or during the subsidence of the general symptoms it is noticed that the child is paralyzed. Occasionally the paralysis is more or less limited to one limb, as the arm, but in many cases it affects the arm and leg on one side (hemiplegia), or if encephalitis is widespread and severe, permanent bilateral palsy (diplegia) may result. The paralysis is first of the flaccid type, but within a week signs of spasticity develop. In mild cases the paralysis may be slight and transitory, in severe cases marked and permanent. Later the upper limb or limbs show spasticity and contracture, and the arm is adducted at the shoulder, the elbow is flexed at a right angle, the forearm is pronated, the wrist is flexed and deviated to the ulnar side, and the thumb and fingers are firmly flexed. Paralysis of the distal parts of the limb is more pronounced than the proximal.

Chief Signs.—Occurrence of symptoms at or shortly after birth in the congenital form; may be history of dystocia in the acquired form; may be sporadic or epidemic in the encephalitic form; onset sudden with convulsions; fever, vomiting, and sometimes coma; may be strabismus and ocular palsies; spastic paraplegia common; later, development of gait or deformity or involuntary movements characteristic of the particular type of paralysis.

Progressive Muscular Atrophy (*Chronic Anterior Poliomyelitis*).—*Characteristics.*—The disease first appears in the upper extremities, manifesting itself by wasting and weakness of the muscles of one hand, commonly the right, the other hand becoming affected after an interval of months. The progress is bilateral, and the degree of weakness corresponds to the degree of wasting. The thumb muscles of abduction and apposition and then the other small muscles of the hands are usually first affected, claw-hand resulting. The wasting then spreads upward, the legs being involved last, and the face often escaping. The reaction of degeneration is only partial. The deep reflexes are diminished or lost.

Chief Signs.—See page 319.

Amyotrophic Lateral Sclerosis.—*Characteristics.*—This affection usually begins as in progressive muscular atrophy with wasting and weakness in the upper limbs, often with spasticity and weakness of the lower limbs but without wasting. The deep reflexes are universally exaggerated. There may be "partial reaction of degeneration."

Chief Signs.—See page 319.

Acute Anterior Poliomyelitis (*Infantile Paralysis*).—*Characteristics.*—Occasionally both arms may be affected, but the paralysis is rarely complete. Paralysis of the upper extremities most often involves the shoulder group, the deltoids being the muscles which usually suffer most severely. In the abortive type, instead of

being complete paralysis, there is only weakness. The paralysis remains flaccid permanently, and the reaction of degeneration is present.

Chief Signs.—See page 628.

Tumor of the Spinal Cord (*Extramedullary*).—*Characteristics.*—A tumor of the spinal meninges in the cervicodorsal region causes at first a unilateral paralysis, which later usually becomes bilateral. The paralysis is either spastic in character from pressure upon the cord, or atrophic and flaccid from pressure upon the emerging roots. Sensory impairment is present along the ulnar side of the hand and arm. Below the lesion paralysis with spasticity and impairment or loss of sensation are found, and the deep reflexes are increased, the plantar reflexes extensor, and the superficial abdominal reflexes diminished or lost.

Chief Signs.—See page 303.

Syringomyelia (*Spinal Gliosis*).—*Characteristics.*—There is muscular paralysis and atrophy of the lower motor neuron type, as in progressive muscular paralysis. The paralysis, however, may be limited to one upper extremity. Spastic paraplegia is common, though rarely severe. The paralysis appears greater than the degree of atrophy would indicate.

Chief Signs.—See page 317.

Hypertrophic Cervical Pachymeningitis.—*Characteristics.*—A few months after the onset there is usually wasting and weakness of the upper limbs, commencing in the hands, with contractures and claw-hand. There are intense bilateral root pains mainly in the arms and neck, and areas of hyperesthesia and anesthesia. The lower limbs are spastic.

Chief Signs.—See page 320.

Erb's Juvenile Muscular Atrophy.—*Characteristics.*—This affection of the muscles of the shoulder girdles and upper arms, usually atrophic, but frequently with a combination of atrophy and pseudohypertrophy, primarily implicates the muscles of the shoulder girdle, especially the lower part of the pectoralis major and the latissimus dorsi, less commonly the upper part of the pectoralis major, trapezius, serratus magnus, and rhomboids. In the upper arm the biceps, triceps, and supinator longus are usually involved, while the deltoid, supra- and infraspinati as a rule escape, but in some instances are found hypertrophied. The affected muscles are weak.

Chief Signs.—Onset some time during puberty and early adolescent life, usually before the age of twenty years.

Facioscapulohumeral Muscular Atrophy (*Landouzy-Déjerine Type*).—*Characteristics.*—In this type of atrophy the face is primarily involved and later the shoulder and upper-arm muscles. The affected muscles are weak.

Chief Signs.—Onset in infancy with weakness and wasting of the muscles of the face; hereditary factor common; eyes cannot be closed; blowing and whistling impossible; lips everted; peculiar smile with straight lips ("rire en travers"); only slight and never marked hypertrophy of the muscles involved.

Hematomyelia (*Spinal Apoplexy*).—*Characteristics.*—When the hemorrhage is in the cervical region, all of the limbs are affected, and also the abdominal and thoracic muscles (whence diaphragmatic breathing only); there is complete anesthesia below the level of the lesion, with absence of reflexes, paralysis of the sphincters, and hyperesthesia in the affected segment. The motor palsy is at first of a

flaccid type. With improvement the reflexes gradually return, the flaccid paralysis by degrees giving place to spasticity, which is accompanied by flexor or extensor spasm of the limbs, and an extensor plantar response.

Chief Signs.—Usually history of injury, especially to the neck, often preëxisting disease of the spinal cord; sudden onset; absence of root pains and muscular spasms; absence of constitutional symptoms; elimination of fracture or dislocation of the spine.

Acute Ascending Paralysis (*Landry's Paralysis*).—*Characteristics.*—Rarely the weakness and paralysis commences in the arms, but usually it begins in the legs. In the usual type, within a few hours, or in three or four days, the palsy may be widespread, the patient lying propped up in bed with the arms and legs in a state of complete flaccid palsy.

Chief Signs.—Occurrence most frequently in males, between twenty and thirty years of age; onset of paralysis sudden; occasionally premonitory paresthesias, pains or weakness; commencement of paralysis in peripheral parts of the lower extremities, ascending progressively to the legs, trunk, and arms.

Less Common Causes.—Spinal caries; carcinoma of the vertebræ; tumor of the spinal cord (intramedullary); double brachial neuritis (crutch pressure); spinal meningeal hemorrhage; "hysteria"; Werdnig-Hoffman type of progressive muscular atrophy of childhood; pseudohypertrophic muscular paralysis; progressive neural muscular atrophy (Tooth's peroneal muscular atrophy); amyotonia congenita; myasthenia gravis; myatonia congenita (stiffness and slowness); basilar meningitis; bulbar paralysis; diphtheritic paralysis; multiple sclerosis; acute encephalitis; general paresis; ventricular hemorrhage; chronic hydrocephalus; pseudobulbar paralysis; occupational neurosis (bimanual occupations); cerebral tumor (especially of the corpus callosum); acute transverse myelitis; beriberi; leprous neuritis; acute febrile polyneuritis.

PARALYSIS OF THE UPPER AND LOWER EXTREMITY ON THE SAME SIDE

(*Hemiplegia*)

Hemiplegia is almost invariably of cerebral, pontine, or medullary origin. The reflexes are eventually exaggerated, and there is rigidity, absence of electrical changes, and later slight atrophy from disuse. In ordinary simple hemiplegia the side opposite the lesion is usually completely paralyzed, the face (except the upper third including the eye), arm, and leg being affected. The lesion is usually in the knee and posterior limb (anterior two-thirds) of the internal capsule. Complete hemiplegia is very rarely of cortical origin. If the arm is paralyzed more than the leg, with little or no anesthesia, the lesion is in the anterior portion of the posterior limb of the internal capsule. If the leg is paralyzed more than the arm and there are hemianesthesia, hemianopsia, and disturbances of hearing, perhaps also of taste and smell, the lesion is well back in the posterior third of the posterior limb. If the hemiplegia is associated with hemianesthesia, hemichorea, or marked tremor, the lesion is in the internal capsule and involves the optic thalamus. Hemiplegia of one side with paralysis of the oculomotor on the other side (Weber's syndrome), sometimes with hemianopsia, results from a lesion in the crus cerebri. If the hemiplegia

is associated with paralysis of the face on the opposite side (crossed paralysis) the lesion is in the lower pons. When motor aphasia occurs with hemiplegia the third left frontal convolution is involved. Hemiplegia with speech disturbance (anarthria) which does not clear up, and with difficulty in swallowing, indicates a lesion in the medulla. In complete hemiplegia the speech is usually affected, but unless the third left frontal convolution is involved (aphasia) or the medulla (anarthria) the speech disturbance soon disappears. Hemiplegia with anesthesia of the opposite side of the face (fifth nerve involvement) is caused by a lesion in the pons below the decussation. If hemiplegia is present with opposite hypoglossal paralysis the lesion involves the spinal fibers of the hypoglossal and one-half of the cervical cord.

Cerebral Hemorrhage (*Apoplexy*).—*Characteristics*.—Sudden hemiplegia preceded by coma or convulsions is often due to cerebral hemorrhage. Aphasia may or may not be present. The paralysis is at first flaccid with absent reflexes, but soon becomes spastic with increased reflexes.

Chief Signs.—Occurrence after forty; arteriosclerosis; sudden onset with vertigo and unconsciousness; paralyzed limbs at first flaccid, early becoming rigid; conjugate deviation frequent; unequal pupils; stertorous breathing; hard slow pulse.

Cerebral Embolism (*Middle Cerebral*).—*Characteristics*.—Sudden, sometimes transient hemiplegia with temporary unconsciousness in a young adult may be due to embolism. Slight anesthesia is also usually present.

Chief Signs.—Occurrence between twenty and fifty; presence of endocarditis, anemia, infectious disease, pregnancy; sudden onset with convulsions, twitchings, and temporary unconsciousness; negative syphilitic history.

Cerebral Thrombosis (*Middle Cerebral Artery*).—*Characteristics*.—Hemiplegia develops slowly (compared to hemorrhage and embolism), and unconsciousness is gradual, or the paralysis may develop during sleep.

Chief Signs.—Occurrence between fifty and seventy; presence of fatty heart, blood dyscrasia, syphilitic, lead, or gouty arteritis; slow onset with prodromal symptoms of headaches, drowsiness, numbness in the hand and foot, vertigo, transient hemiplegia, and temporary aphasia; recovery usually complete, or permanent after a few weeks.

Cerebral Syphilis.—*Characteristics*.—Hemiplegia, usually accompanied by some cranial-nerve palsies (especially ocular), may occur, preceded by a persistent and intense headache due to a gummatous meningitis. The hemiplegia is often transient.

Chief Signs.—History of infection; occurrence between twenty and forty; pupillary changes; optic neuritis; severe headache, worse at night; irregular and fleeting character of symptoms; attacks of somnolence; positive blood Wassermann; positive spinal fluid.

Meningeal Hemorrhage.—*Characteristics*.—Partial or complete hemiplegia occurs on the side opposite the clot, with increased reflexes, some rigidity, and spasmodic movements of the muscles of the affected side.

Chief Signs.—History of head injury, often associated with alcoholism or insanity; period of temporary unconsciousness, followed by a period of consciousness, and ending with a period of unconsciousness gradually developing as the clot grows; contracted or unequal pupils; pulse at first slow and full, later rapid and feeble; elevation of temperature; spinal puncture (clear fluid).

Cerebral Tumor.—*Characteristics.*—A hemiplegia may develop gradually when the motor area is encroached upon, preceded by more or less prolonged and progressive general symptoms. Convulsions generally precede the hemiplegia.

Chief Signs.—Persistent intense headache; projectile vomiting without nausea; various palsies; convulsions general or local; paresthesias; impaired eyesight (optic neuritis); mental dullness or slowness.

General Paresis (*General Paralysis of the Insane; Dementia Paralytica*).—

Characteristics.—Hemiplegia may follow an epileptic seizure or may come on with great suddenness and be transient.

Chief Signs.—Occurrence in middle life; syphilitic history; Argyll-Robertson, unequal, or irregular pupils; unequal knee-jerks; mental deterioration; epileptiform seizures; spinal fluid examination (positive Wassermann, colloidal gold test, increased globulin, increased cells).

Cerebral Abscess.—*Characteristics.*—Hemiplegia may occur in abscess if involving the motor area. It is incomplete at first but progresses steadily.

Chief Signs.—History of antecedent head injury or suppurative disease of the ear, nose, or lung; headache; vomiting; vertigo; mental dullness or delirium; optic neuritis; local tenderness and heat of the scalp; septic symptoms with or without irregular fever; slow pulse.

Infantile Hemiplegia.—*Characteristics.*—Hemiplegia follows a general or unilateral convulsion, which may last for hours. This paralysis gradually improves, the face first and most, then the leg, and the arm last and least. The growth of the affected side is retarded, and contractures may result. Ataxic, choreic, and athetoid movements and tremors develop, and also at times, epilepsy.

Chief Signs.—Occurrence during the first three years of life, before, during, or after birth; various posthemiplegic disorders.

Uremia.—*Characteristics.*—Hemiplegia may come on spontaneously or follow a convulsion, and is often transient. The cause is a localized or diffuse cortical edema.

Chief Signs.—History of kidney disease; nervous manifestations (mania or delusional insanity); convulsions; headache; dyspnea; coma; high blood urea; low phthalein elimination; albumin and casts in the urine.

Neurosis (“*Hysteria*”).—*Characteristics.*—Hemiplegia may occur, sets in abruptly or gradually, and is flaccid or spastic, but always remains the same. The contractures differ from those of organic paralysis, disappear during sleep, and the extensor plantar reflex and ankle clonus are absent. The face, as a rule, is unaffected. While lying supine, if asked to raise her leg, the sound limb only is elevated; while in an organic hemiplegia, an attempt to raise the sound leg often leads to the paretic leg being lifted as well as the other.

Chief Signs.—Occurrence usually in young females; emotional manifestations (laughing, crying, globus hystericus); presence of anesthetics; special sense disturbances; contraction of the visual fields; visceral manifestations; sudden cure by shock or suggestion.

Tuberculous Meningitis (*Basilar Meningitis*).—*Characteristics.*—Occasionally, hemiparesis may be the first symptom. During the second and third stages hemiplegia may develop, usually insidiously, either from the cortical or capsular involvement (from affection of branches of the middle cerebral artery). Some-

times the paralysis is transient, disappearing and reappearing, but sooner or later it usually becomes bilateral.

Chief Signs.—See page 89.

Cerebral Arteriosclerosis.—*Characteristics.*—Attacks of apoplexy with or without aphasia are frequent, but they are usually temporary and transient. The frequent repetition of these attacks eventually leads to a disturbance in nutrition of nervous tissue and to final softening and atrophic processes.

Chief Signs.—See page 307.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—The motor affections vary in degree and extent, are often transitory, but tend to progress. Long before the classical symptoms of ataxia, intention tremor, spasticity, nystagmus, and slurred or staccato speech develop, there have been irregular symptoms, among which may be hemiplegia.

Chief Signs.—See page 94.

Hemichorea.—*Characteristics.*—Often, before the choreic movements appear, and after they have ceased, there is apt to be considerable, and in some cases, extreme weakness of the affected side.

Chief Signs.—Those of ordinary chorea, confined to one side.

Less Common Causes.—Carcinoma (terminal); pulmonary tuberculosis (terminal); hemisection of the spinal cord; cerebellar tumor; intracranial aneurysm; caisson disease; hemorrhagic encephalitis; thalamic syndrome; tabes dorsalis; Raynaud's disease (transient); acute poliomyelitis; acute bulbar paralysis; Brown-Sequard paralysis; sinus thrombosis; gastric hemorrhage; lead poisoning; malaria; measles; migraine; mumps; scarlet fever; scurvy; smallpox; typhoid fever; pachymeningitis; cerebrospinal meningitis; pregnancy; purpura.

ATROPHY OR WASTING OF WHOLE OR PART OF ONE UPPER EXTREMITY

Acute Anterior Poliomyelitis (*Infantile Paralysis*).—*Characteristics.*—The group of muscles permanently affected undergoes complete flaccid atrophy and the affected limb shows retarded development as the child grows. In the upper limb the shoulder muscles are most often involved.

Chief Signs.—See page 628.

Syringomyelia (*Spinal Gliosis*).—*Characteristics.*—In some cases the wasting is confined for months or longer to one upper extremity. In the majority of cases the wasting commences in the small muscles of the hand (interossei, thenar, and hypothenar groups), eventually spreading into the forearm, arm, and shoulder. In a smaller proportion of cases the scapulohumeral muscles are the first affected; this is seen by inability to raise the arm, which hangs flail-like by the side. The wasting may spread irregularly; for example, it may proceed from the hand to the shoulder, leaving out the arm. The weakness is out of proportion to the degree of wasting.

Chief Signs.—Insidious onset, usually between twenty and thirty years; may be initial pains and tingling; dissociated anesthesia (loss of sensations of heat, cold, and pain, with retention of light touch) in sharply defined areas, asymmetrical and

irregular; thin, glossy, sweating skin; painless arthropathies; spastic paraplegia; scoliosis; may be painless whitlows (Morvan's disease).

Complete Lesion of the Brachial Plexus.—*Characteristics.*—Wasting of all of the muscles of the upper extremity will occur and they will either not respond to a faradic current, or will require a stronger one than do the normal muscles.

Chief Signs.—See page 308.

Duchenne-Erb Palsy (Upper-Arm Type).—*Characteristics.*—In old-standing cases much wasting of the paralyzed muscles is observed, especially affecting the teres minor, pectoralis major, deltoid, supra- and infraspinatus, subscapularis, biceps, brachialis anticus, and supinator longus muscles.

Chief Signs.—History of obstetrical injury, malposition of the arm in breast amputation, or direct trauma; unilaterality; hanging of the flaccid arm to the side, with pronation of the forearm; inability to elevate or abduct the arm at the shoulder-joint; little or no sensory impairment.

Klumpke's Paralysis (Lower-Arm Type).—*Characteristics.*—Wasting of all the intrinsic muscles of the hand occurs with paralysis and a claw-shaped appearance. The flexor muscles of the forearm also suffer atrophy.

Chief Signs.—May be presence of cervical rib; may be history of injury; impairment of sensation along the border of the hand and forearm.

Cervical Rib.—*Characteristics.*—The motor symptoms consist mainly of paralysis and atrophy of the intrinsic muscles of the hand. The atrophy is mainly unilateral, is more common in women than men, and more often affects the right side.

Chief Signs.—See page 271.

Musculospiral Paralysis (Radial Paralysis).—*Characteristics.*—The characteristic feature in a long-standing case is wasting of the supinator longus (brachioradialis) muscle, with drop-wrist. The atrophy will be visible over the extensor group of muscles on the radial side of the forearm just below the elbow.

Chief Signs.—See page 309.

Ulnar Nerve Paralysis.—*Characteristics.*—Muscular wasting is marked, especially of the hypothenar eminence, the interosseal spaces, and between the thumb and index finger.

Chief Signs.—See page 309.

Circumflex Nerve Paralysis.—*Characteristics.*—Wasting of the prominence of the shoulder is usually marked and changes the shape of the shoulder. There may be a distinct space between the head of the humerus and the acromion, which is not due to wasting as much as to relaxation of the ligaments of the joint.

Chief Signs.—See page 309.

Ischemic Paralysis (Volkman's Contracture).—*Characteristics.*—In this condition, which is a myositis of the muscles of the forearm from pressure, there is a swelling at first from edematous effusion; later the muscles become shrunken, hard, and contracted by interstitial fibrous tissue, the fingers being in a flexed position.

Chief Signs.—See page 310.

Tumor of the Spinal Cord (Extramedullary).—*Characteristics.*—In growths starting in front of the cord high up enough to involve the anterior roots of the brachial plexus, muscular atrophy of root distribution is a valuable focal sign. This often begins unilaterally.

Chief Signs.—See page 303.

Chronic Osteo-Arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics.*—Muscular atrophy is rarely absent as contractions and deformities develop. The shoulders, elbows, and wrists may be involved singly or combined. The joints affected are usually swollen due to thickening of the synoviæ, ligaments, cartilages, and bones.

Chief Signs.—See page 737.

Gonorrheal Arthritis.—*Characteristics.*—This form of arthritis, which in the upper extremity is most common in the wrist, may be accompanied by marked atrophy.

Chief Signs.—See page 609.

Tuberculous Arthritis.—*Characteristics.*—Atrophy of the muscles in the neighborhood of the joint, together with swelling of the joint itself, gives a peculiar spindle-shaped appearance. The skin is white, owing to obliteration of the sub-jacent vessels, and is adherent to the parts beneath.

Chief Signs.—See page 323.

Less Common Causes.—Leprosy; hematomyelia (usually bilateral); lead poisoning; progressive muscular atrophy (may begin unilaterally); amyotrophic lateral sclerosis (may begin unilaterally); “hysteria”; brachial monoplegia of cerebral origin (atrophy of disuse).

ATROPHY OR WASTING OF WHOLE OR PART OF BOTH UPPER EXTREMITIES

Progressive Muscular Atrophy (*Chronic Anterior Poliomyelitis*).—*Characteristics.*—Wasting and weakness begins insidiously in the small muscles of one hand, commonly the right, the other hand being affected after an interval. Progress is bilateral but more advanced on one side. The first muscles affected are those of the thumb, next, those of the little finger, the interossei, and lumbricales. “Claw-hand” develops. The wasting progresses to the forearm, then to the upper arm and shoulder, and in advanced stages wasting becomes extreme and universal, involving both muscles and fat.

Chief Signs.—Occurrence more commonly in male adults between twenty-five and forty years of age; insidious onset; may be fibrillary tremors, especially on percussion; diminution or loss of deep reflexes; partial reaction of degeneration; absence of sensory and sphincter disturbances.

Amyotrophic Lateral Sclerosis.—*Characteristics.*—The muscular atrophy begins insidiously and progresses gradually. It often appears first in the intrinsic hand muscles (Aran-Duchenne type), less commonly in the shoulder and upper arm muscles. The loss of power is in proportion to the amount of atrophy. The atrophy usually begins in one limb before the other, but soon becomes more or less symmetrical.

Chief Signs.—Insidious onset; occurrence of spasticity and weakness without wasting, in the lower limbs; spastic gait; may be fibrillary tremors; greatly and universally increased deep reflexes; may be positive Babinski; may be partial reaction of degeneration; normal sensibility; normal sphincter control.

Syringomyelia (*Spinal Gliosis*).—*Characteristics*.—Both upper extremities may be wasted, but usually the atrophy predominates in one, or may be limited to one for a long period of time. The atrophy commences in the small muscles of the hands and eventually spreads into the forearm, arm, and shoulder, though not necessarily in sequence. Weakness precedes and accompanies the wasting.

Chief Signs.—See page 317.

Chronic Lead Poisoning.—*Characteristics*.—After the paralysis (wrist-drop) occurs there is rapid muscular atrophy, with the reaction of degeneration. The muscles chiefly involved in the atrophy are the extensors of the wrist and fingers. The supinator longus escapes.

Chief Signs.—See page 326.

Alcoholic Neuritis.—*Characteristics*.—The muscles of the hands and feet show general wasting, though not to any marked extent, and the skin becomes thin, dry, transparent, and glossy. The hands and feet, and more especially the fingers and toes, are thinned and tapering.

Chief Signs.—See page 311.

Arsenical Neuritis.—*Characteristics*.—In some cases there may be rapid wasting of the muscles of the forearms and legs, coming on simultaneously with loss of motor power; but in these cases spinal cord changes probably exist.

Chief Signs.—See page 311.

Chronic Osteo-Arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics*.—Muscular atrophy in the neighborhood of the affected joints is common and sometimes advances very rapidly. It is often most marked in the hands.

Chief Signs.—See page 737.

Infantile Diplegia.—*Characteristics*.—The whole extremity may be atrophied and dwindled, including the muscles, bones, and joints.

Chief Signs.—See page 312.

Fracture-Dislocation of the Cervical Vertebrae.—*Characteristics*.—In incomplete anatomical, but complete physiological, severance of the cord in the cervico-dorsal region, the muscles of the upper limbs may show rapid wasting.

Chief Signs.—See page 311.

Hypertrophic Cervical Pachymeningitis.—*Characteristics*.—After root pains referred to the upper limbs have persisted for months atrophic paralysis sets in, especially involving the intrinsic muscles of the hands and flexors of the wrists and fingers, with contractures and "claw-hand."

Chief Signs.—Chronicity; intense bilateral root pains in the arms and neck; areas of hyperesthesia and anesthesia; may be spastic paraplegia; may be paresthesias; may be disturbance of the sphincters.

Acute Anterior Poliomyelitis (*Infantile Paralysis*).—*Characteristics*.—Both arms may occasionally be affected. The muscles involved undergo atrophy, involving a particular group, usually the shoulder group, the forearm and hand remaining intact. If recovery ensues the atrophic palsy shows itself by a loss of movement and a flail-like condition of the limbs.

Chief Signs.—See page 628.

Tumor of the Spinal Cord (*Extramedullary*).—*Characteristics*.—There may be atrophic and flaccid paralysis of the shoulder and arm or forearm and hand, from pressure upon emerging roots, in tumors involving the meninges in the cervico-

dorsal region. The changes are unilateral in the early stages, but later become bilateral.

Chief Signs.—See page 303.

Hematomyelia (*Spinal Apoplexy*).—*Characteristics.*—The local segmental symptoms, including atrophy, will vary, of course, according to the region of the cord into which the hemorrhage has occurred. Gradually developing atrophy and contractures of the hands may occur in cases of hematomyelia in the cervical region. If in the lower cervical region, there will be atrophy of the intrinsic muscles of the hands, together with oculo-pupillary changes, and sensory impairment along the ulnar borders of the hands.

Chief Signs.—See page 313.

Erb's Juvenile Muscular Atrophy.—*Characteristics.*—There is usually atrophy of the muscles of the shoulder girdle, but frequently a combination of atrophy and pseudohypertrophy. The muscles of the shoulder girdle primarily implicated are the lower part of the pectoralis major and the latissimus dorsi, less commonly the upper part of the pectoralis major, trapezius, serratus magnus, and rhomboids. In the upper arm, the biceps, triceps, and supinator longus are usually involved, while the deltoid, supra- and infraspinatus muscles, as a rule, escape; but in some instances they are found to be apparently hypertrophied.

Chief Signs.—See page 313.

Facioscapulohumeral Muscular Atrophy (*Landouzy-Déjerine Type*).—*Characteristics.*—The shoulders and arms are affected similarly to those found in the Erb or juvenile type, but in this type the disease begins with weakness and wasting of the muscles of the face.

Chief Signs.—See page 313.

Less Common Causes.—Tuberculosis of the cervical vertebræ; malignant disease of the cervical vertebræ; Landry's paralysis; leprosy; multiple sclerosis; tabes dorsalis; myxedema; cretinism; bulbar paralysis; Tooth's peroneal type of muscular dystrophy.

SWELLING OF THE ELBOW

Sprain of the Elbow.—*Characteristics.*—Swelling may be marked from effusion of blood and lymph.

Chief Signs.—History of injury; severe pain and tenderness; partial loss of function; absence of deformity; x-ray (to exclude fracture).

Acute Synovitis.—*Characteristics.*—The joint is distended with fluid. The swelling is on each side of the olecranon and tendon of the triceps, and fluctuates.

Chief Signs.—History of a closed injury, low-grade infection, or nervous influences; pain, redness, increased heat, fixation in flexion; may be fever and other constitutional symptoms.

Chronic Synovitis.—*Characteristics.*—The swelling is similar to that of acute synovitis, with slight pain, weakness and restriction of motion, muscular atrophy, and sometimes crepitus.

Chief Signs.—May be history of acute attack or not; negative x-ray.

Fracture of the Elbow Region.—*Characteristics.*—The lower extremity of the humerus may be broken above the condyles (supracondyloid fracture), above and between the condyles (T- or Y-shaped fracture), or through either condyle or

epicondyle, or the lower epiphysis may be separated. The olecranon process of the ulna may be broken; the coronoid process is rarely broken alone, but usually with backward dislocation of both bones. The head of the radius is seldom broken alone, and the neck rarely broken. In supracondyloid fracture the lower fragment passes upward and backward, broadening the elbow from front to back, and the upper arm is shortened. In intercondyloid fracture there is widening of the elbow and shortening of the humerus. If the internal condyle of the humerus is broken the fragment of the ulna passes upward, thus destroying the carrying function of the arm; if the external condyle is broken there is little displacement, but pain and swelling are generally marked. Separation of the lower epiphysis of the humerus causes a deformity similar to supracondyloid fracture. When the olecranon process is broken the fragment is drawn upward. In the other fractures there is little deformity.

Chief Signs.—History of injury, usually direct; pain, swelling, ecchymosis, loss of function, false point of motion, crepitus; x-ray.

Backward Dislocation of Both Bones of the Forearm.—*Characteristics.*—Swelling and deformity of the elbow are marked. The coronoid process lodges in the olecranon fossa, the forearm being flexed midway between pronation and supination, and shortened. Occasionally the coronoid process is broken (mobility and crepitus). The lower end of the humerus displaces the artery and soft tissues forward and projects at the crease of the elbow; the upper ends of the bones of the forearm form a projection posteriorly, and the relations between the olecranon, head of the radius, and condyles are markedly altered.

Chief Signs.—History of direct or indirect injury, usually in children.

Forward Dislocation of the Head of the Radius.—*Characteristics.*—The head can be felt rotating beneath the skin, and a depression is noticed posteriorly beneath the external condyle. The forearm is midway between pronation and supination and cannot be flexed beyond a right angle.

Chief Signs.—History of fall on the hand when the forearm is pronated between pronation and supination, or of direct violence to the posterior part of the joint.

Acute Suppurative Arthritis (Septic Arthritis).—*Characteristics.*—The elbow is swollen, there is great pain and tenderness, and the joint is fixed, hot, red, and fluctuating. The overlying skin is edematous.

Chief Signs.—History or evidence of a wound, or pyemic process; fever, chills, sweating; prostration; leukocytosis; aspiration of pus; x-ray.

Suppurative Olecranon Bursitis.—*Characteristics.*—A painful, tender swelling superficial to the olecranon process is present, with redness, edema, and fluctuation. In most cases the fluid which accumulates in the bursa escapes through the wound and thus prevents distention of the bursa, while the edema of the subjacent soft tissues obscures its outline.

Chief Signs.—History and evidence of a wound; x-ray.

Rheumatic Fever.—*Characteristics.*—The elbow-joint is fourth in frequency of involvement. Symmetrical large joints are often involved successively. The joint is swollen, red, hot, tender, and extremely painful on movement. The synovial membrane is often palpable, but edema of the skin is rare. Extensive effusion into the joint is also rare.

Chief Signs.—See page 295.

Chronic Osteo-Arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics.*—The elbow may be involved as part of this polyarticular affection. Monarticular osteo-arthritis of the joint is not common. The swelling tends to be nodular in shape, nearly confined to the joint, and in acute exacerbations painful on movement. The pain is worse in wet weather and at night. Movement is limited, muscular wasting is constant, and crepitus may be obtained.

Chief Signs.—See page 737.

Miner's Elbow (*Chronic Olecranon Bursitis*).—*Characteristics.*—There is a tense, smooth, fluctuating, somewhat tender swelling between the skin and the olecranon process.

Chief Signs.—Occurrence mainly in miners; history of a slight injury or repeated traumatisms; x-ray.

Sarcoma.—*Characteristics.*—Sarcoma may arise in the proximal ends of the radius or ulna or in the connective tissues near the elbow-joint. In osteosarcoma (myeloid) there is a symmetrical distention of that portion of the bone nearest the joint, and there may be some enlargement of the joint itself and possibly a little synovitis. There may be crackling on pressure. In periosteal sarcoma there is great irregularity of contour, a more nodular feel, and a much denser consistency. Muscular atrophy is not conspicuous. A sarcoma of the soft tissues is often smooth, regular in outline, and enclosed by a pseudocapsule, but may be infiltrating in character; the blood-vessels may be prominent over the tumor, and degeneration with fluctuation or ulceration may occur.

Chief Signs.—See page 616.

Tuberculosis of the Elbow-Joint.—*Characteristics.*—The characteristic spindle-shaped swelling of tuberculous arthritis is well marked. There is marked muscular atrophy, limitation of motion, localized tenderness, and slight pain. Abscesses may point on either side of the olecranon, or occasionally may follow the ulnar nerve and present on the inner side of the arm. Sinuses may form.

Chief Signs.—Occurrence usually during adolescence; examination of aspirated pus; tuberculin test; x-ray.

Syringomyelia (*Spinal Gliosis*).—*Characteristics.*—The joints of the upper limbs are more frequently affected by arthropathies in this disease. The joint is enlarged and painless, very similar to the Charcot's joint; pus is, however, more apt to form.

Chief Signs.—See page 317.

Charcot's Joint (*Tabetic Arthropathy*).—*Characteristics.*—This condition may develop in the elbow, though not as commonly as in the knee. The joint is markedly swollen and deformed, pain is slight or absent, mobility is excessive, creaking and grating may be elicited, and bony masses are present. The onset is usually insidious.

Chief Signs.—See page 611.

Hemarthrosis.—*Characteristics.*—A painless, fluctuating, non-febrile swelling of the joint occurs following a slight injury or spontaneously. The blood may be absorbed, leaving the joint normal, or adhesions may form and the joint be obliterated.

Chief Signs.—May be hemophilia.

Less Common Causes.—Dislocation backwards of both bones of the forearm; lateral dislocation of both bones of the forearm; dislocation of the ulna; backward dislocation of the radius at the elbow; dislocation of the radius forward and the ulna backward; subluxation of the head of the radius; gonorrheal arthritis; pneumococcus arthritis; infective arthritis; rickets; Henoch's purpura.

SKIN AFFECTIONS OF THE ELBOWS AND KNEES

Psoriasis.—*Characteristics.*—The extensor surfaces of the elbows and knees are especially and often first affected. There are slightly elevated, well-defined plaques, thickly covered with imbricated, glistening, whitish scales, which when forcibly removed leave minute bleeding points.

Chief Signs.—Chronicity with tendency to improve in summer; absence of itching.

Ichthyosis.—*Characteristics.*—The lesions are more marked on the elbows and knees than elsewhere. The skin is dry, harsh, and roughened, with considerable branlike scaling which is worse in windy weather.

Chief Signs.—Presence from early life; absence of all inflammatory symptoms.

Scabies (The Itch).—*Characteristics.*—The lesions are almost constant in this region, covering a surface around the elbow 4 to 5 cm. in diameter. There are papules, vesicles, and pustules, among which are numerous scratch marks. The burrows are rarely found here in typical form.

Chief Signs.—History of contagion; intense itching, worse at night; multiplicity of the lesions; detection of burrows.

Less Common Causes.—Xanthoma; diabetic xanthoma; eczema; pellagra.

SWELLING OF THE WRIST

Sprain of the Wrist-Joint.—*Characteristics.*—Swelling arises very early if there is much blood effused. In any case some swelling is present in a few hours.

Chief Signs.—History of sudden twist or fall on the hand; pain and tenderness; some loss of function; absence of signs of fracture or dislocation; x-ray (to exclude fracture).

Colles' Fracture.—*Characteristics.*—A silver-fork deformity of the wrist is present, the hand and lower fragment usually passing upward and backward, and the hand is abducted. Anterior displacement gives the gardener's-spade deformity.

Chief Signs.—History of injury (fall upon the outstretched hand, or direct blow); usual signs of fracture; shortening between the external condyle and the radial styloid process; abduction of the hand and prominence of the styloid process of the ulna; x-ray (fracture of the radius within an inch of the wrist).

Fracture of the Wrist.—*Characteristics.*—The wrist is swollen as in sprain. If swelling and pain of the wrist persist for a week or ten days after an injury, all ordinary remedies failing, the chances are that one or more bones of the carpus are broken, most often the scaphoid. This may be associated with dislocation of the semilunar bone (see below).

Chief Signs.—History of direct violence or fall upon the extended palm; loss of function; tenderness; sometimes crepitus; x-ray.

Rickets (*Rachitis*).—*Characteristics*.—Enlargement of the epiphyses at the wrist is one of the most constant bony deformities of the disease; less frequently similar swellings are seen at the elbow.

Chief Signs.—See page 374.

Simple Ganglion.—*Characteristics*.—There is a small, tense, round, firm, progressively but slowly growing, and painless when uninflamed, swelling on the dorsum of the wrist. The contents look like glycerin-jelly. Occasionally a ganglion diminishes in size, or disappears spontaneously.

Chief Signs.—History of constant use of the wrist muscles or injury to the wrist region.

Chronic Thecitis.—*Characteristics*.—In ordinary non-tuberculous thecitis there is a tender swelling above the wrist, which is weak and stiff, and the tendon sheaths crepitate on motion. In tuberculous thecitis there is at first distention of the tendon sheath with serum; the swelling is firm or doughy when due to granulation tissue, but is fluctuating when due to fluid; grating is marked and "rice bodies" may be palpable. Later the tuberculous process may become more active, giving rise to pain and edema, with a discharge of pus into the cavity of the sheath, or through the skin.

Chief Signs.—May be history of acute attack, injury, rheumatoid arthritis (simple thecitis); presence of tubercle bacilli in the aspirated fluid or in the granulation tissue (tuberculous thecitis).

Rheumatic Fever.—*Characteristics*.—The wrist-joints are third in order of frequency of involvement and are often symmetrically involved. The joint is swollen, red, hot, tender, and extremely painful on movement. Extensive effusion into the joint is rare, and suppuration never occurs.

Chief Signs.—See page 295.

Chronic Osteo-Arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics*.—The wrist-joints may be involved as part of a general polyarthritis. Monarticular affection of this joint is not common. There is nodular swelling of the joint with muscular wasting and pain on movement during exacerbations. The movements are limited, and there may be crepitus.

Chief Signs.—See page 737.

Gonorrheal Arthritis.—*Characteristics*.—The wrist-joint, next to the knee and ankle, is most frequently affected. There is often much swelling of the soft tissues about the joint, which is more responsible for the swelling than is the effusion into the joint. There is severe pain, and muscular wasting is marked. The disease may be acute or chronic, and suppuration is rare.

Chief Signs.—See page 609.

Infective Arthritis of Infectious Diseases.—*Characteristics*.—Many joints are simultaneously involved, among which are the wrist-joints. There is swelling, redness, heat, soreness, and pain, but the process soon subsides.

Chief Signs.—See page 737.

Tuberculosis of the Wrist-Joint.—*Characteristics*.—The joint presents a puffy swelling, loses its normal contour, and becomes spindle-shaped. The joint is stiff and partly flexed, pain is severe or slight, and muscular atrophy is marked. At a later stage there is often fluctuation, and there may be abscesses or sinuses.

Chief Signs.—Occurrence at any age; chronicity; x-ray.

Hypertrophic Pulmonary Osteo-Arthropathy.—*Characteristics.*—The wrists, particularly, are deformed. The lower ends of the long bones (radius and ulna) and the carpal and interphalangeal joints are enlarged, hence the joints appear large and the patient cannot bend them properly. Clubbed fingers are usually also present.

Chief Signs.—Presence of chronic pulmonary disease (80 per cent).

Anterior Dislocation of the Semilunar Bone.—*Characteristics.*—A slight silver-forked deformity is observed, the posterior projection being the os magnum, which is separated from the radius by a groove which marks the former situation of the dislocated semilunar. The dislocated bone is felt under the flexor tendons of the wrist, the palm seems shorter than its fellow, the fingers are partly flexed, and active or passive movement causes pain.

Chief Signs.—History of forcible overextension or twist of the wrist; may be fracture of the scaphoid; x-ray.

Madelung's Deformity.—*Characteristics.*—A progressive forward subluxation of the radiocarpal joint occurs, with prominence of the lower end of the ulna and abduction of the hand.

Chief Signs.—Occurrence in young girls during adolescence; absence of history of injury.

Posterior Dislocation of the Wrist.—*Characteristics.*—In this uncommon accident the deformity resembles Colles' fracture, but the styloid process of the ulna and radius project beneath the skin on the flexor side of the wrist and their relation to each other is not disturbed.

Chief Signs.—History of a fall on the hand or violence to the wrist; absence of signs of fracture; x-ray.

Separation of the Lower Epiphysis of the Radius.—*Characteristics.*—The lower fragment mounts upon the upper and produces a dorsal projection like that found in Colles' fracture, but the hand does not deviate to the radial side. The deformity resembles also that of backward dislocation of the wrist, but the relation between the styloid process and the carpal bones is unaltered.

Chief Signs.—Occurrence in children; history of falling upon the palm of the hand; x-ray.

Myeloid Sarcoma.—*Characteristics.*—This tumor sometimes develops in the lower end of the radius. A more or less uniform swelling appears, which is at first bony hard, and if the bone yields, crackling is obtained on pressure. There is usually dull boring pain.

Chief Signs.—Chronicity; x-ray.

Less Common Causes.—Barton's fracture; synovitis; suppurative arthritis; Still's disease; Henoch's purpura; gout; tabes dorsalis; syringomyelia; "hysterical" joint; forward dislocation of the wrist; lead neuritis (Grübler's tumor); aneurysm of the radial artery.

WRIST-DROP

Chronic Lead Poisoning.—*Characteristics.*—The paralysis is bilateral in most cases. The most typical form of lead paralysis is the bilateral wrist-drop. One arm or both arms and both legs may also be involved. In the usual form there is

paralysis of the extensors of the fingers and wrist. Atrophy follows. The onset is usually subacute with paresthesias.

Chief Signs.—History of occupation; blue line on the gums; blood changes (anemia, basophilic degeneration, Grawitz' granulation); recurring attacks of colic and diarrhea; cerebral symptoms; arteriosclerosis.

Alcoholic Neuritis.—*Characteristics.*—Wrist-drop is bilateral and usually associated with foot-drop and the steppage gait. The lower extremities alone may be involved. The deep reflexes are lost.

Chief Signs.—History of chronic overuse of alcohol; gradual onset with neuralgic pains and tingling and numbness in the hands and feet; gradual paralysis, usually beginning in the feet and legs, then involving the hands and forearms, with foot-drop and wrist-drop; swelling and congestion of the feet and hands; delirium or Korsikow's syndrome.

Fracture of the Humerus.—*Characteristics.*—Unilateral wrist-drop may occur often after fracture of the humerus from injury to the musculospiral (radial) nerve.

Chief Signs.—History of injury; signs of fracture of the humerus with inability to extend the wrist.

Musculospiral Paralysis (Radial Paralysis).—*Characteristics.*—Wrist-drop of traumatic origin is usually unilateral.

Chief Signs.—History of pressure or wound; inability to extend the wrist, though the terminal phalanges may still be extended; loss of sensation over the anterior and posterior aspects of the radial side of the elbow and forearm, radial side of the posterior surfaces of wrist and hand, and dorsal surface of the thumb, first, second, and half of the third fingers.

Arsenical Neuritis.—*Characteristics.*—Wrist-drop occurs but always with foot-drop, the latter being more pronounced. The condition is bilateral. Wasting follows the extensor paralysis, and the knee-jerks are lost (as also other deep reflexes). Reaction of degeneration is present.

Chief Signs.—History of occupation; slow onset with paresthesia and pains in the limbs; coexistent skin pigmentation (brown mottled discoloration around the neck and on the abdomen); resultant deformities of the feet and hands.

Acute Febrile Polyneuritis.—*Characteristics.*—Wrist-drop and foot-drop are both present.

Chief Signs.—Acute onset after exposure to cold or overexertion; chills, general pains, and fever; tingling in the fingers and toes; progressive loss of muscular power, beginning in the legs and followed by rapid wasting; unequal or Argyll-Robertson pupils.

Less Common Causes.—Leprous neuritis; postdiphtheritic neuritis; diabetic neuritis (mainly foot-drop); beriberi; neuritis in tuberculosis and syphilis (toxic); from zinc, mercury, ether, bisulphid of carbon, and naphtha; neuritis after typhoid fever, smallpox, scarlet fever.

PAIN IN THE HAND AND FINGERS

Wounds and burns are obvious causes of pain.

Palmar Abscess.—*Characteristics.*—There is violent pulsatile pain in the hand.

Chief Signs.—History and evidence of open wound of the palm or fingers, or presence of a thecal abscess of the thumb or little finger; great swelling of the hand and fingers, more marked on the dorsum; fingers flexed and rigid; fever, sweats, leukocytosis; enlarged axillary glands; incision, revealing pus beneath the palmar fascia.

Cellulitis (*Including Felon or Whitlow*).—*Characteristics.*—In the wound and its neighborhood there is severe throbbing pain, especially when the hand is dependent.

Chief Signs.—History and evidence of a wound; diffuse, tender swelling of the skin and deeper soft tissues of the finger (felon), or the hand, or both; redness about the wound; lymphangitis of the forearm; enlarged axillary glands; may be suppuration, superficial or deep (if the periosteum of the phalanx is involved—"bone felon or whitlow").

Acute Suppurative Thecitis (*Tenosynovitis; also called Felon or Whitlow*).—*Characteristics.*—The pain is of a pulsatile character, and is increased by contraction of the flexor muscles when the finger is so held that no motion of the bones is possible, but not by pressure on the tip of the finger (the reverse of pus in a joint).

Chief Signs.—May be history of punctured wound of the flexor side of a finger or thumb, as by a pin or needle (often not obtainable); edema, tenderness, redness, and swelling of the digit, and possibly tense fluctuation; flexion of the fingers; constitutional symptoms; may be enlarged axillary glands; incision.

Acute Non-Suppurative Tenosynovitis.—*Characteristics.*—There is tenderness on pressure and some pain on movement.

Chief Signs.—History of traumatism; presence of a swelling, usually in the sheaths of the extensor tendons of the thumb and radial side of the hand; creaking on movement, active or passive.

Paronychia ("Ring Around").—*Characteristics.*—There is throbbing and violent pain at the base of the finger-nail, increased by motion, pressure, or dependent position.

Chief Signs.—History of small wound in the region of the finger-nail; redness and slight swelling about the nail; superficial accumulation of pus about the nail or under it; may be loss of the nail.

Suppurative Synovitis and Arthritis.—*Characteristics.*—In the course of a day or two after a wound in the neighborhood of a joint, often apparently trivial, the joint swells and becomes very painful. Pressure on the end of the injured finger, tending to crowd the bones together, causes pain.

Chief Signs.—History and evidence of an open wound; discharge of tenacious pus through the wound; swelling of the member with maximum transverse diameter at the joint; local heat, redness, tenderness, and fluctuation; rough grating when the joint surfaces are rubbed together; fever.

Erysipelas.—*Characteristics.*—There is burning pain, which is most intense at the border and is increased by pressure.

Chief Signs.—Presence of a small abrasion; acute onset with chill; remittent fever, lasting a few days and terminating by crisis; presence of an area of tenderness, edema, and redness, the border spreading rapidly with sharply defined edges, the redness most intense at the border; may be enlarged axillary glands.

Erysipeloid.—*Characteristics.*—The pain is of moderate severity, but itching and burning are marked.

Chief Signs.—History of handling putrid animal matter and presence of a wound; slight fever; presence of a swelling with elevated, sharply defined edges with central fading; occurrence usually near the end of a finger.

Frost-Bite (*Chilblain; Pernio*).—*Characteristics.*—In the initial exposure sensation is deadened; as the fingers are thawed out tingling and burning pain is experienced. During subsequent winters the same fingers will be the seat of alternating sensations of numbness and burning pain when exposed to the cold.

Chief Signs.—History of initial exposure; coldness and pallor during exposure, succeeded by warmth and reddening when the hand becomes warm.

Sprain of a Finger.—*Characteristics.*—There is pain according to the severity of the injury, increased by manipulation. If the bones are contused pain will be elicited when the joint surfaces are pressed together; if the ligaments alone are traumatized the pain is greater on overflexion or overextension of the joint.

Chief Signs.—History of injury to the finger; swelling of the joint; somewhat impaired function; absence of deformity or crepitus.

Fracture of a Metacarpal Bone.—*Characteristics.*—There is local pain in the hand, increased by movement of the hand or pressure and manipulation.

Chief Signs.—History usually of a blow with the fist; flattening of the knuckles at the back of the hand (due to anterior displacement of the distal fragment); posterior angular deformity; false point of motion; crepitus.

Fracture of a Phalanx.—*Characteristics.*—The pain is local and increased by movement of the fragments.

Chief Signs.—History of direct violence; swelling; mobility; crepitus; loss of function; only slight deformity.

Dislocation of a Finger.—*Characteristics.*—The pain is not severe.

Chief Signs.—History of a blow upon the finger-tip or fall upon the outstretched hand; defect in the bony alignment of the finger at a joint; limitation of range of motion.

Dislocation of the Thumb.—*Characteristics.*—The pain is of moderate severity.

Chief Signs.—History of overextension of the thumb; typical deformity, the proximal phalanx of the thumb projecting backward at right angles, the terminal phalanx being flexed, and the head of the metacarpal bone forming a prominence anteriorly.

Hematoma Beneath the Finger-Nail.—*Characteristics.*—There may be great pain in the end of the finger, even though the nail is partly or wholly lifted from its bed.

Chief Signs.—History of a blow or a crushing of the terminal phalanx; presence of clotted blood beneath the nail.

Chronic Osteo-Arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics.*—The enlarged and thickened joints of the phalanges may be very painful during exacerbations and in wet weather, particularly at night.

Chief Signs.—See page 737.

Raynaud's Disease.—*Characteristics.*—The hands alone may be affected, more often the hands and feet. The pain and other symptoms vary with the severity of the disease. In the winter, on the slightest exposure, there is acrocyanosis of the

fingers, which gives place in warmth to active hyperemia, with swelling, throbbing, and aching. In the severer form the pain is of great severity, sometimes severe enough to require morphin.

Chief Signs.—Symmetrical distribution (both hands, both feet, or all); digits white and cold, or red and hot; aggravation in cold weather; may be symmetrical dry gangrene.

Acroparesthesia.—*Characteristics.*—The victims complain of a burning pain, associated with numbness and tingling, in the fingers and palms of the hands, noticed chiefly in the latter part of the day after work is over and intensified when they are warm in bed. In the early morning the fingers are numb and clumsy, but the discomfort passes while the patient is at work, returning toward evening.

Chief Signs.—Occurrence mainly in women between thirty-five and fifty-five, who are continually using their hands, and especially immersing them in water of different temperatures; may be alcoholism; may be redness or pallor of the affected parts, associated with a subjective sensation of heat and swelling; symmetrical distribution; may be similar affections of the feet.

Occupation Neurosis.—*Characteristics.*—Pain of a cramplike character accompanies the muscle spasm evoked by employment of the limb in a particular occupation. The acute pain associated with the spasm may be followed by a dull aching for some hours after the occupation has been indulged in.

Chief Signs.—Occupation requiring repeated use of certain muscles (here, of the hand and forearm); recovery with rest of the part or use of the muscles in a different way; recurrences common.

Gout (Podagra).—*Characteristics.*—The affected joints are swollen, hot, red, painful, and tender, similar to the joints affected by osteo-arthritis. While early attacks of gout are often confined to the metatarsophalangeal joint of the great toe, they are common enough in some of the smaller joints of the upper extremity.

Chief Signs.—See page 640.

Neurofibroma.—*Characteristics.*—This tumor sometimes causes the individual great pain. If developing in the stump of an amputation the pain may be referred to the lost member.

Chief Signs.—History of a contusion or wound of the nerves or amputation; may be painful subcutaneous nodules along the nerve or in the stump.

Less Common Causes.—Rheumatic fever; chondroma; sarcoma; carcinoma; erythromelalgia; tuberculosis of the tendon sheaths; acute osteomyelitis; syphilitic dactylitis; tuberculous dactylitis; thrombo-angiitis obliterans.

SWELLINGS OF THE HAND AND FINGERS

(See also "Edema of One or Both Upper Extremities," page 305; "Enlargement of the Hands," page 332; "Clubbed Fingers," page 341; and "Skin Affections of the Forearms and Hands," page 338.)

Swellings due to infectious processes and injuries are considered under the preceding caption, "Pain in the Hand and Fingers," and will not be repeated here. The following conditions are of the nature of growths or tumors.

Wart (Verruca).—Characteristics.—This is common upon the fingers and hands. It is a tumor of the epidermis of papillary structure and usually elevated above the level of the normal skin. The top is flat and shows numerous clefts between more actively growing points, so that an old wart may resemble a cauliflower.

Chronic Osteo-Arthritis (Arthritis Deformans; Rheumatoid Arthritis).—Characteristics.—The joints of the fingers become large and stiff and Heberden's nodes develop; the latter are small bony swellings, usually on the distal side of the terminal interphalangeal joints, and may be the first sign of arthritis.

Chief Signs.—See page 737.

Fibroma and Fibrolipoma.—Characteristics.—The growths may be found on the hands or fingers. Fibroma occurs as a smooth, flabby, or firm tumor, either in or closely attached to the skin. It grows slowly, usually without pain. It has a uniform appearance and is covered by normal skin. It often gives a distinct wave of fluctuation. A fibrolipoma is softer than a pure fibroma.

Chief Signs.—Removal and biopsy.

Lipoma.—Characteristics.—This is a well-encapsulated tumor lying in the subcutaneous plane of fascia. It is soft and semifluctuating and while freely movable is attached to the skin at one point. This may occur in the hand, but rarely in the fingers.

Papilloma.—Characteristics.—This is an irregularly rounded tumor covered with normal or slightly hypertrophied skin, and it is attached to the hand by a neck smaller than the mass of the tumor.

Osteoma.—Characteristics.—A hard painless tumor of slow growth covered by normal skin is felt to be firmly attached to the bone from which it grows. Such tumors may be multiple.

Chief Signs.—X-ray.

Inclusion Cyst of the Palm.—Characteristics.—This is a smooth, tense, possibly fluctuating, rounded tumor intimately attached to the skin, which cannot be moved over it. It is somewhat similar to a sebaceous cyst.

Granuloma ("Proud Flesh").—Characteristics.—Exuberant granulations are prone to spring from wounds of the fingers, forming a granular, soft, rounded mass, which may bleed easily. If of long standing in a small wound they become firmer in texture, pedicled in shape, and present somewhat the appearance of a sarcoma.

Chondroma (Enchondroma; Ecchondroma).—Characteristics.—This tumor most often occurs in the phalanges and metacarpal bones and is most commonly multiple. It causes a rounded tumor of the bone at the epiphysis which may give rise to pain and ulceration of the skin. It grows slowly, imparts a sensation of firmness to the touch (unless degenerated), is inelastic, smooth or nodular, immovable, and may ossify.

Chief Signs.—X-ray.

Sarcoma.—Characteristics.—If originating in the skin the tumor is a soft or hard lump closely resembling a fibroma. It occurs sometimes on the back of the hand. If originating in one of the metacarpal or phalangeal bones (periosteal and myeloid sarcomas) it resembles closely an osteoma; the myeloid variety may crackle on pressure and causes dull boring pain.

Chief Signs.—Removal and biopsy (connective-tissue sarcoma); x-ray (osteosarcoma).

Varix (*Venous Aneurysm*).—*Characteristics.*—One or more veins on the back of the hand may be dilated, usually congenitally, forming either a single smooth swelling or a more or less dilated and tortuous one. The tumor may pulsate faintly if connected with an artery. With steady compression of the tumor combined with elevation of the arm the swelling almost entirely disappears, to reappear immediately as soon as pressure is relieved. It is also softly fluctuating and gives a bluish shade to the overlying skin.

Gout (*Podagra*).—*Characteristics.*—If affected, the joints of the fingers, especially of the thumb, in the acute attack become swollen, red, shiny, and tender. If involved in chronic gout they become deformed and creak; tophi or chalk stones may develop about the joint, forming masses which may slowly ulcerate the skin and expose themselves to view. Heberden's nodes sometimes develop.

Chief Signs.—See page 640.

Metastatic Carcinoma.—*Characteristics.*—Nodular tumors may develop in the phalangeal bones; they may cause pain and ulceration of the skin.

Chief Signs.—Presence of a carcinoma elsewhere; biopsy.

Syphilitic Dactylitis.—*Characteristics.*—A swelling of the finger gradually forms. It is fusiform in shape and becomes purple in color. One or more fingers may be involved. The proximal phalanx is most liable to the lesion. The superficial form is apt to soften and ulcerate. The deep form not infrequently causes tissue destruction and shortening of the digit from rarefying osteitis or dry caries. Some cases of superficial dactylitis are symmetrical and of short duration. There may be little or no pain.

Chief Signs.—Those of congenital syphilis; x-ray.

Tuberculous Dactylitis (*Spina Ventosa*).—*Characteristics.*—The proximal phalanx becomes enlarged by a flasklike inflation of the bone from a tuberculous osteomyelitis.

Chief Signs.—Occurrence at an early age; boring pain, tenderness, and thickening of the bone; presence of tuberculosis of the lungs or lymph glands; x-ray.

Morvan's Disease.—*Characteristics.*—Painless whitlows may appear upon the fingers in syringomyelia, of which they may be an early feature of the disease or may be absent throughout.

Chief Signs.—Those of syringomyelia (see page 317).

Less Common Causes.—Charcot's joint; tuberculosis of the tendon sheaths; chronic suppurative synovitis.

ENLARGEMENT OF THE HANDS

(See also "Edema of One or Both Upper Extremities," page 305.)

Acromegaly.—*Characteristics.*—There is a curious spadelike shape of the hands, which are broader and thicker than normally, usually without marked augmentation in length. The lines on the palms are much deepened, while the thenar and hypothenar eminences and the interphalangeal folds are overdeveloped. The fingers lack the normal tapering and are of equal thickness distally and proximally.

The nails are usually broad and large, but there is no curving, and the terminal phalanges are not "clubbed." The wrists may be enlarged but the arms are rarely affected.

Chief Signs.—Occurrence commonly in the third decade; increase in size of the head, hands, and feet; headache, occasionally irritability, deafness, and somnolence; may be bitemporal hemianopsia, increasing blindness with optic atrophy; enlargement and elongation of the face, especially the lower jaw, superior maxilla, zygoma, and supra-orbital ridge; enlargement of the feet, especially the big toes; may be kyphosis and lordosis; disturbed carbohydrate metabolism (early stages, polyuria, glycosuria, and hyperglycemia; later, hypoglycemia and high carbohydrate tolerance); x-ray of the sella turcica and cranium.

Hypertrophic Pulmonary Osteo-Arthropathy.—*Characteristics.*—In the fully developed condition the hands are large, the terminal phalanges swollen ("clubbed"), the nails large and much curved. The bones of the forearm are diffusely thickened, particularly near the wrist.

Chief Signs.—Onset usually gradual, unnoticed by the patient, in other cases great sensitiveness of the fingers, toes, and ends of the long bones near the ankle; may be stiffness of the joints and tenderness, but no redness or actual pain; occasional kyphosis; absence of changes in the bones of the head; association with chronic disease, particularly of the lungs, practically never heart disease; x-ray (showing ossifying periostitis).

Myxedema.—*Characteristics.*—The hands are large and flat and upon examination the increase in bulk is found to be due to a swelling of the subcutaneous tissues by "solid edema" which does not pit on pressure. The nails are thick, hard, and brittle.

Chief Signs.—See page 41.

Less Common Causes.—Syringomyelia; elephantiasis.

DEFORMITIES OF THE HAND

(See also "Deformities of the Fingers, page 345, and "Clubbed Fingers," page 341.)

Cretinism.—*Characteristics.*—The hands (and feet) are undeveloped and pudgy and are "spadelike" in appearance, the thickened skin forming folds or irregular masses. The fingers (and toes) are in a similar state, and tend to stand apart, thus rendering the motions clumsy. The nails are dry, brittle, and short, and their surface striated or streaked with areas of white, denoting localized detachment from their underlying bed.

Chief Signs.—See page 41.

Tetany.—*Characteristics.*—The deformity in this disease occurs only during the attacks of carpopedal spasm. The upper extremities are usually first affected and both sides equally. The position is very characteristic: The fingers are flexed at the metacarpophalangeal joints and the phalanges extended; the thumbs are adducted almost to the little finger; the wrist is flexed acutely and the hand drawn somewhat to the ulnar side. If the spasm is very marked no motion is allowed at the wrist. This deformity is known as "accoucheur's hand."

Chief Signs.—See page 685.

Dupuytren's Contraction.—*Characteristics.*—There is a shortening of the palmar fascia, the result of a chronic cirrhotic inflammation, which begins as an induration in the palm, and, as it progresses, gradually puckers the skin and causes a permanent flexion of the little and ring fingers, and less frequently of the remaining fingers.

Chief Signs.—Occurrence commonly in middle-aged men; may be bilateral; may be history of continued pressure by a tool.

Athetosis (*Mobile Spasm*).—*Characteristics.*—The wrist remains more or less flexed, and the fingers and thumb slowly disengage themselves and become strongly hyperextended, spreading out in a fanlike fashion. The fingers are widely abducted and wander individually or conjointly with a semimethodical irregularity.

For causes of Athetoid Movements, see page 745.

Achondroplasia (*Chondrodystrophy*).—*Characteristics.*—The so-called “trident hand” is characteristic. The fingers are very short and of nearly equal length, and an angular separation is seen at the second joint.

Chief Signs.—See page 13.

Mongolian Idiocy.—*Characteristics.*—The hands of these children are short and thick, especially the fingers; the little finger not uncommonly is so short that it does not reach to the last interphalangeal point of the ring finger.

Chief Signs.—See page 42.

Osteo-Arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics.*—In the acute form, the hands, when involved, show very characteristic changes. The knuckle joints are swollen, red, tender, and show limitation of motion. Swelling of the interphalangeal joints is common with a resulting thickening which gives a fusiform appearance to the fingers. Partial dislocation, particularly at the terminal joints, is common. In the chronic or osteo-arthritic type it is the terminal phalangeal joints rather than the interphalangeal which are chiefly affected. They are swollen and nodular, the swelling being nearly confined to the joints. There may be characteristic “ulnar deviation” of the fingers due to affection of the metacarpophalangeal joints (“seal-fin” hand).

Chief Signs.—See page 737.

Ulnar Nerve Paralysis.—*Characteristics.*—The appearance of the hand is characteristic. The little and ring fingers are hyperextended at the metacarpophalangeal joints; all the fingers, but especially the little and ring fingers, are flexed at the interphalangeal joints, abductor and adductor action of the fingers is lost, and adduction of the thumb is also in abeyance, although a false adduction is possible by aid of the flexor longus pollicis and the extensors of the thumb. The interosseous spaces are well defined owing to wasting of the interossei. The hand may also be tilted somewhat to the radial side.

Chief Signs.—See page 309.

Progressive Muscular Atrophy (*Chronic Anterior Poliomyelitis*).—*Characteristics.*—Ultimately the contraction of the flexor and extensor muscles and the extreme atrophy of the thumb muscles, the interossei, and lumbricales produce the “claw-hand” (main en griffe of Duchenne). In this deformity the first phalanges are overextended and the others flexed.

Chief Signs.—See page 319.

Amyotrophic Lateral Sclerosis.—*Characteristics.*—Wasting and atrophy of the

small muscles of the hands and those of the forearm, followed by contractures, produce deformities of the hands ("claw-hand," "ape-hand"). There is some degree of spasticity of the upper extremities present also.

Chief Signs.—See page 319.

Median Nerve Paralysis.—*Characteristics.*—In total paralysis of the nerve, the hand appears to be broader than normal, because of the flattening of the thenar eminence and lowering of the thumb to the same plane as that occupied by the four fingers, thus producing "ape-hand." The hand is slightly inclined to the ulnar side and the thumb cannot be apposed to the other fingers.

Chief Signs.—See page 310.

Dislocation of the Thumb.—*Characteristics.*—In complete backward dislocation, the first phalanx projects backward at a right angle, the terminal phalanx being flexed, and the head of the metacarpal bone forms a prominence anteriorly. In the complex form of backward dislocation, the thumb is parallel with, but posterior to, the metacarpal bone.

Hypertrophic Cervical Pachymeningitis.—*Characteristics.*—The hand assumes a position of hyperextension at the wrist, extension of the fingers at the metacarpophalangeal, and flexion at the interphalangeal joints, constituting a variety of "preacher's hand" or "benediction hand." The condition is generally bilateral with some asymmetry, and is usually associated with pain and ill-defined disturbances of sensibility in the two arms.

Chief Signs.—See page 320.

Cervical Rib.—*Characteristics.*—Supernumerary cervical ribs may lead to the production of a "claw-hand" when they cause neuritic changes in the trunk formed by the eighth cervical and first dorsal contributions to the brachial plexus. The muscular atrophy is generally preceded by pain in the arm and neck.

Chief Signs.—See page 271.

Friedreich's Disease.—*Characteristics.*—Muscular contractures may produce the "main bote," a hyperextension of the terminal phalanges, or else a minor degree of the "main en griffe" or "claw-hand." Prehension is clawlike, and the fingers may be spread or overdistended before grasping an object. The more characteristic deformity is seen in the foot ("pes cavus").

Chief Signs.—See page 94.

Myxedema.—*Characteristics.*—The deformity is in the nature of an enlargement and flattening, the increase in bulk being due to the deposit in the subcutaneous tissues of a myxedematous material ("solid edema"), which does not pit on pressure.

Chief Signs.—See page 41.

Syringomyelia (Spinal Gliosis).—*Characteristics.*—The "claw-hand" present in this disease resembles that seen in progressive muscular atrophy in general appearance and may show the modifications to which the terms "ape-hand" and "preacher's-hand" have been applied. In the former of these the atrophy chiefly involves the thenar muscles, constituting the preliminary stage to the "claw-hand"; and in the latter, ulnar paralysis and contracture causes a flexion of the ring and little fingers.

Chief Signs.—See page 317.

Volkman's Contracture (Ischemic Myositis).—*Characteristics.*—There is claw-

like contraction of the fingers at the interphalangeal joints, the metacarpophalangeal articulations remaining straight. In the milder forms the fingers can be straightened when the wrist is bent; in the worst cases the wrist is also strongly flexed.

Chief Signs.—Occurrence between three and fifteen years of age; history of compression of the forearm by a splint or bandage or of simple contusion; shortening, atrophy, induration, and anemia of the muscles; pronation and slight flexion of the forearm.

Hematomyelia (*Spinal Apoplexy*).—*Characteristics.*—"Claw-hand" is present in old cases involving the cervical region.

Chief Signs.—See page 313.

Hemiplegia.—*Characteristics.*—The contractures of the arm and hand are replaced in course of time by permanent deformity. The fingers are flexed upon the palm, the wrist is flexed upon the forearm, while the elbow is retained in a state of permanent flexion and applied closely to the side of the body.

For causes of Hemiplegia, see page 314.

Less Common Causes.—Contraction of tendons; loss of the extensor tendons from suppuration; transverse myelitis ("claw-hand"); acute anterior poliomyelitis ("claw-hand" in adults); Tooth's peroneal type of muscular atrophy ("claw-hand"); burns of the hands; dislocation of the metacarpal bones; dislocation of the metacarpophalangeal joints.

NUMBNESS AND TINGLING IN ONE OR BOTH UPPER EXTREMITIES

Cerebral Thrombosis (*Softening*).—*Characteristics.*—Tingling of the fingers may be a prodromal symptom, together with headache, vertigo, speech disturbances, and memory defects, and may occur for days before the onset.

Chief Signs.—See page 315.

Apoplexy (*Cerebral Hemorrhage*).—*Characteristics.*—Occasionally numbness and tingling, or pain in the extremities, may precede the apoplexy, but premonitory indications are rare.

Chief Signs.—See page 315.

Menopause.—*Characteristics.*—During this period the woman may complain of various paresthesias in the limbs or trunk, of which numbness is common. The paresthesias are associated with gradual cessation of the menstrual function.

Multiple Neuritis (*Peripheral Neuritis*).—*Characteristics.*—In the sensory type of alcoholic neuritis the earliest subjective symptoms are numbness or deadness affecting first the feet and later on the hands, rapidly followed by pain and cramps. In arsenical neuritis, paresthesias, of which numbness is one, are the earliest symptoms, while in lead neuritis they are rare.

Chief Signs.—See page 311.

Chronic Osteo-Arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics.*—Numbness and tingling of the hands occur in the later stages when the hands are affected.

Chief Signs.—See page 737.

Uremia.—*Characteristics.*—Tingling and numbness of the fingers occur among

the various obvious symptoms related to uremia, of which the chief are headache, twitching, cramps, itching, local and transient paralysis, transient amaurosis or deafness, persistent insomnia.

Chief Signs.—See page 316.

Raynaud's Disease.—*Characteristics.*—During the stage of local syncope ("dead fingers"), there is a feeling of numbness, with some stiffness and impairment of objective sensation which may last from a few minutes to several hours.

Chief Signs.—See page 343.

Subacute Combined Degeneration of the Spinal Cord.—*Characteristics.*—The earliest symptoms are sensations of numbness and coldness in the distal parts of the limbs, the feet, however, being affected earlier and more severely than the hands.

Chief Signs.—Occurrence between forty-five and sixty-five; anemia; first stage of paresthesia; second stage of spastic paraplegia with stiffness and cramps in the muscles of the legs; ataxia of the legs, hands, and arms; weakness of sphincter action; exaggerated deep reflexes; extensor plantar reflexes; absence of abdominal reflexes; loss of sensation up to a definite level; third stage of flaccid paraplegia with loss of reflexes, loss of sphincter control, bedsores, mental deterioration; negative spinal fluid.

Pernicious Anemia.—*Characteristics.*—In about one-third of the cases there is complaint of tingling and numbness in the feet and legs, less often in the upper extremities. This is usually due to the presence in pernicious anemia of the above disease of the cord.

Chief Signs.—See page 395.

Tabes Dorsalis (Locomotor Ataxia).—*Characteristics.*—Numbness and tingling of the feet, less often the hands and ulnar side of the forearm, may be among the first symptoms.

Chief Signs.—See page 104.

Multiple Sclerosis (Disseminated Sclerosis; Insular Sclerosis).—*Characteristics.*—Numbness over the upper and lower limbs, body, or face, together with feelings of heaviness and weight in the limbs, are common subjective symptoms, and are rarely absent at one period or another in this disease.

Chief Signs.—See page 94.

Syringomyelia (Spinal Gliosis).—*Characteristics.*—Numbness, and a feeling of deadness radiating down the arm or up the neck are early and the most frequent subjective sensations. These symptoms precede the motor weakness.

Chief Signs.—See page 317.

Acroparesthesia.—*Characteristics.*—There is numbness and tingling of the fingers and palms of the hands (less commonly of the feet), associated with a burning pain, noticed chiefly in the latter part of the day and becoming intensified when the patient is warm in bed. In the early morning the fingers are numb and clumsy, becoming more nearly normal during the day, and getting worse in the evening.

Chief Signs.—See page 330.

Cervical Rib.—*Characteristics.*—There may be numbness and tingling in the ulnar border of the forearm to the wrist and fingers. Sensory changes are often slight. Pain is the initial, commonest, and may be the sole symptom.

Chief Signs.—See page 271.

Less Common Causes.—Acute transverse myelitis; acute ascending paralysis; bilateral brachial neuritis; aneurysm; endarteritis obliterans; thrombo-angiitis obliterans; aura epileptica; beriberi; ergotism; bromism; Erb's spinal paralysis; neurosis; leprosy; myxedema; neuroma; Recklinghausen's disease; tumor of the spinal cord; tetany.

SKIN AFFECTIONS OF THE FOREARMS AND HANDS

(See also "Skin Affections of the Palms and Soles," page 340, and "Skin Affections Involving the Finger-Nails," page 349.)

Eczema.—*Characteristics.*—The hands are the commonest site for eczema. It may be of any variety but has a tendency to become squamous. There are two characteristics, scaliness and induration, and often a number of weeping areas are present.

Chief Signs.—Intense itching; resistance to treatment.

Warts (*Verruca*).—*Characteristics.*—Common warts (*verruca vulgaris*) are generally observed on the hands and fingers of children. The wart consists of a firm, circumscribed elevation, varying in size from a millet seed to a pea. The surface is horny and irregular, and between the elevations may be seen black specks (so-called "seeds").

Scabies (*Itch*).—*Characteristics.*—The first symptom is itchiness, usually upon the backs of the hands and between the fingers. In a well developed case the palms and flexor surfaces of the wrists and arms are usually invaded. The primary lesion is either a vesicle or papule. Burrows are not always found, but when so are characteristic, consisting of straight or tortuous lines from one-eighth to one-half inch long ending in a slight elevation. Along the line are numerous black dots.

Chief Signs.—History of contagion; intense itching; characteristic distribution of lesions on the fingers, axillæ, penis.

Furuncle (*Boil*).—*Characteristics.*—The forearm is one of the common sites for furuncle. It appears as an acute, deep-seated, inflammatory, circumscribed, rounded, more or less acuminate, firm formation usually terminating in central suppuration.

Keratosis Pilaris.—*Characteristics.*—This occurs on the extensor surfaces as closely aggregated pinhead-sized epidermal accumulations at the mouths of the hair follicles. A hair pierces each elevation or is buried within it.

Chief Signs.—Absence of subjective symptoms; chronicity.

Dermatitis Venenata (*Poison Ivy*).—*Characteristics.*—The part becomes red and swollen and soon minute papules and vesicles appear.

Chief Signs.—History of contact; burning and itching; duration, a few days to several weeks.

Irritation Dermatitis (*Mechanical, Chemical, Thermic, X-Ray, Solar, etc.*).—*Characteristics.*—The skin of the hands is frequently affected by irritations of many kinds, ranging from a mild erythema to a severe acute dermatitis or a chronic eczema. A careful inquiry into the etiology will often suffice to make the diagnosis.

Chief Signs.—History of local irritation; recovery after removal of the cause.

Leukoderma (*Vitiligo*).—*Characteristics.*—One or more small, round or oval, milky white, circumscribed smooth patches appear, tending to increase in size and exhibit at their margin increased pigmentation. It most frequently appears primarily upon the backs of the hands, but often also invades the face and trunk.

Impetigo Contagiosa.—*Characteristics.*—A not unusual site for a vesicopustule of impetigo is on the fingers and around a finger-nail, where it is somewhat suggestive of a superficial paronychia. The typical lesions are oval vesicles or blebs, becoming seropurulent and drying to thin yellowish crusts.

Chief Signs.—History of contagion; acute onset; appearance simultaneously or in succession, of lesions upon the face and scalp.

Tinea Circinata (*Ringworm*).—*Characteristics.*—The hands and forearms are frequent sites for ringworm. Several types occur: completely ringed lesions clearing in the center, and sometimes composed of rings within rings, either slightly or markedly inflammatory, with vesicles at the margins; round elevated lesions not clearing in the center, often of considerable depth; deep kerionlike (honeycombed) lesions seen in those who work around horses. The patches are scaly.

Chief Signs.—Itching; presence of tinea parasites in the scales.

Pellagra.—*Characteristics.*—The eruption begins as a slight erythema on the backs of the hands, and possibly over the face, occurring in the spring, and disappearing and reappearing in the fall or spring. The first skin lesion is a persistent erythema of the backs of the hands stopping short at the line of the sleeve. Later erythema of the face, neck, feet, and other parts may appear. There may be pigmentation and some desquamation. The skin may take on a deep red color, and with repeated attacks may become indurated, thickened, and dark in color; later atrophy and thinning may follow. The erythema occurs sometimes on protected parts.

Chief Signs.—Red tongue; diarrhea or constipation; nervousness, irritability; immobile face; increased reflexes; delirium; dementia; dietetic test (Goldberger diet of milk, fruit, fresh meat).

Lichen Planus.—*Characteristics.*—The lesions occur on the flexor surface of the arm. Reddish papules varying in size from 1 to 5 mm. in diameter appear rather suddenly, often arranged in rows but sometimes confluent. The papules are distinctly angular, become umbilicated, and later have a distinct purplish tint shining by reflected light. Patches and annular lesions may occur.

Chief Signs.—Occurrence commonly in poorly nourished or neurotic adults; intense itching; duration one to two months or longer.

Erythema Multiforme.—*Characteristics.*—The hands and forearms, with the legs and face, are the sites of predilection. The eruptions usually appear suddenly and new crops develop from time to time. The papular variety is commonest and is usually confined to the backs of the hands and forearms. The lesions vary in size from one-quarter to three-quarters of an inch, some round, some irregular in shape, sharply circumscribed, and varying in color from a pale pink to a bright red. Sometimes the lesions are annular.

Chief Signs.—Acute onset with malaise, fever, headache, joint pains; absence of itching; duration one to two weeks.

Lupus Vulgaris.—*Characteristics.*—The hands frequently suffer, though the

face more commonly. The lesion is a shallow irregular ulcer overhung by the borders of skin. Growth is always slow, taking three to six months to reach an inch in diameter. At the borders the individual tubercles appear as "apple-jelly" nodules under pressure of a glass slide. A crust soon forms and after a year or more the center of the lesion heals, the ulceration advancing at the edges. There may be several centers of ulceration. Bones are never involved and there is little secretion.

Chief Signs.—Occurrence in early life; absence of signs of syphilis; biopsy.

Papulonecrotic Tuberculid.—*Characteristics.*—The forearms are one of the common sites. There are several nodules arising in the corium, usually around the hair follicles; the centers become necrotic, and small superficial ulcers result, healing with the formation of scar tissue and pigmentation. The lesions are rarely more than 3 to 4 cm. in diameter.

Chief Signs.—Occurrence usually in young adults; absence of comedones; scars of previous attacks; limited distribution; disappearance in four to six weeks.

Tuberculosis Verrucosa Cutis (*Anatomical Tubercle*).—*Characteristics.*—This is a sharply localized wartlike growth. It appears upon the knuckle or other parts of the hand or forearm. It begins as a small papule and gradually increases to the diameter of nearly an inch. The edge is sharply circumscribed. Another form is that in which new lesions appear in the vicinity of the old and the individual patches grow much larger. Pus may exude. There is at times a tendency for central healing with scar formation. Its favorite site is the knuckles.

Chief Signs.—Inoculation test.

Less Common Causes.—Dermatitis herpetiformis; xeroderma pigmentosum; sclerodactyly (scleroderma of the fingers); leprosy; anthrax; oriental sore; lichen scrofulosus; ichthyosis; tinea unguium; dyshidrosis; angiokeratoma (wartlike nevus); melanoderma; lichenization; psoriasis (as a part of general psoriasis); porokeratosis; acrodynia; sporotrichosis; blastomycosis; dermatitis medicamentosa; granuloma annulare; dermatitis repens; prurigo.

SKIN AFFECTIONS OF THE PALMS AND SOLES

Callus.—*Characteristics.*—A hard thickened grayish mass results from hypertrophy of the horny layer of the epidermis and gradually merges into healthy skin. It appears in places on the palms and soles subjected to local pressure. Occasionally it may become fissured or ulcerated.

Eczema.—*Characteristics.*—The squamous form is the usual variety and may be associated with great keratotic thickening and painful fissures. There is scaliness and induration and often a number of weeping areas. The edge may be sharply circumscribed.

Chief Signs.—Itching; chronicity.

Keratosis Palmaris et Plantaris.—*Characteristics.*—The palmar surfaces of the hands and soles are covered by a horny layer of varying thickness, reaching sometimes up to a centimeter. The skin may appear as one piece or the natural folds in the skin may become deepened, producing a hyperkeratotic mosaic-like mass. The whole lesion may be flat or there may be verrucosities. The color varies from gray to a brownish black.

Chief Signs.—Occurrence from early life; familial tendency; chronicity; amelioration in summer.

Syphilis.—*Characteristics.*—The palms and soles may be involved in the generalized eruption of the early secondary stage. A relapsing late secondary manifestation may be a localized, asymmetrical or symmetrical, and persistent, patch of dull red macules or papulosquamous lesions covered throughout or merely at the edges by scales or epidermal shreds, and confined to the palms and soles. A late tertiary eruption is not uncommon. At first there are a number of isolated thickened papulosquamous patches, usually in the natural lines; then some scaling and cracking occurs and the lesions extend, so that they usually become confluent. The edge is well defined, the color a deep red, and there are usually some white overlying scales. At times distinctly elevated and circumscribed papules or nodules are seen, which may be aggregated in patches having a circinate outline. Punctate keratoses sometimes occur which may be removed with a pointed instrument.

Chief Signs.—Evidence of secondary or tertiary syphilis; slow development (late secondary and tertiary lesions); resistance to ordinary treatment; positive Wassermann.

Tinea Circinata (*Ringworm*).—*Characteristics.*—There is a geographic area in the palm, usually in the center, in which there is scaliness and desquamation with a whitish border. The lesion is orbicular with a smooth desquamating center of yellowish tint. The edge of the lesion consists of separated, raised, and partly exfoliated epidermis. Around the patch rounded closed vesicles may be visible under the skin which signify peripheral growth of the lesion.

Chief Signs.—History of contagion; itching.

Pompholyx (*Dyshidrosis*).—*Characteristics.*—The disease is limited to the hands and feet, especially the palmar and plantar surfaces. Deep-seated roughly symmetrical vesicles looking like sago grains develop, work their way up toward the surface, and become larger. There are six to twenty lesions upon each extremity. The lesions are sharply defined but may coalesce. New crops appear from time to time.

Chief Signs.—Chronicity with exacerbation in summer; itching.

Less Common Causes.—Psoriasis; scabies; ephidrosis; arsenical keratoderma; botryomycosis; Darier's disease; warts; xanthasma; pityriasis rubra pilaris; granuloma pyogenicum.

CLUBBED FINGERS

("Hippocratic Fingers")

The finger ends are bulbous and the nails much curved longitudinally and laterally, due to fibrous thickening of the connective tissues. The affection comes on gradually and unnoticed, or there may be great sensitiveness of the ends of the long bones and of the fingers and toes. The affection is almost always bilateral and symmetrical, and is said to take place first in the thumb and forefingers; later the other fingers also become clubbed. The toes may also be clubbed. This condition differs from hypertrophic pulmonary osteo-arthritis in that in the latter, a more rare condition, there are also enlargements of the ends of the bones of both arms and legs (see page 333).

Congenital Heart Disease.—*Characteristics.*—A marked form of clubbing occurs, associated with cyanosis, especially in pulmonary stenosis with or without a perforated interventricular septum. The change is confined to the pulp of the finger, which is thicker than normal and broadest near the tip, tapering in a proximal instead of a distal direction. The nails are very convex in both longitudinal and transverse diameters and are usually cyanotic. The form of the bones is practically unchanged. The earlier in intra-uterine life or in extra-uterine life that the congestion occurs, and the longer its duration, the more marked is the clubbing.

Chief Signs.—See page 394.

Bronchiectasis.—*Characteristics.*—Extreme clubbing of the fingers is so commonly associated with dilation of the bronchi as to be of decided value in diagnosis. There may be incurving of the nails. The toes may be clubbed also and in some instances the end of the nose becomes bulbous in appearance. Particularly extreme examples are seen where tuberculosis is associated with the bronchiectasis.

Chief Signs.—See page 359.

Empyema (Purulent Pleurisy).—*Characteristics.*—The clubbing of the fingers may develop very rapidly and instances have been recorded in which the condition was apparent within two or three weeks. It has been noted also that the clubbing disappears with the removal of the pus from the pleural cavity.

Chief Signs.—See page 425.

Chronic Pulmonary Tuberculosis (Phthisis).—*Characteristics.*—Clubbing of the fingers is very common, but in the ordinary chronic type the clubbing is never extreme; when it is, one can be reasonably certain that the tuberculosis is associated with marked fibrosis of the lung and dilatation of the bronchi.

Chief Signs.—See page 357.

Fibroid Phthisis.—*Characteristics.*—Marked clubbing of the fingers and also of the toes may be present if the bronchi are dilated (bronchiectasis).

Chief Signs.—See page 361.

Chronic Interstitial Pneumonia (Cirrhosis of the Lungs).—*Characteristics.*—As in fibroid phthisis (see above).

Chief Signs.—See page 361.

Hypertrophic Emphysema.—*Characteristics.*—There may be a moderate degree of clubbing in long-standing cases.

Chief Signs.—See page 374.

Acquired Valvular Disease in Children.—*Characteristics.*—Clubbing of the fingers may sometimes be seen in long-standing cases.

Chief Signs.—History of acute endocarditis or rheumatic fever; dyspnea on exertion; physical signs of mitral or aortic valvular lesions; attacks of decompensation.

Mitral Stenosis.—*Characteristics.*—Minor degrees of clubbing may be observed, due to the persistent congestion of the terminal parts, but in such cases the symptom has to be looked for, as it is not particularly obvious.

Chief Signs.—See page 452.

Less Common Causes.—Asthma; chronic bronchitis; chronic jaundice; chronic dyspnea; cirrhosis of the liver (Hanot's); Banti's disease; enterogenous cyanosis;

aortic aneurysm; subclavian or axillary aneurysm (unilateral); syringomyelia; pericarditis; mitral regurgitation; adherent pericardium; pleurisy with effusion; mediastinitis; mediastinal tumor; sarcoma of the lung; leprosy; congenital syphilis; chronic adhesive pleurisy.

GANGRENE OF THE FINGERS OR HAND

Frost-Bite.—*Characteristics.*—When the fingers have been badly frozen they are whiter than normal, painless, anesthetic, and the peripheral portion dies, the color passing in a day or so from a dark red to a reddish- or greenish-black. Dry gangrene develops, and a line of demarcation forms. Areas of superficial gangrene are also not uncommon. If a finger which is not so badly frozen is brought suddenly into a warm atmosphere, hyperemia takes place when the blood rushes into the frosted tissues, blebs form, and moist gangrene may result.

Chief Signs.—History of exposure; failure of reaction after careful thawing out.

X-Ray Gangrene.—*Characteristics.*—A chronic, slowly progressing burn may follow constant exposure to the x-rays, ending in loss of the fingers. Beginning like an ordinary burn the condition progresses until deep ulcers form and sloughing occurs. Dry gangrene of the fingers is also seen.

Chief Signs.—Occurrence in x-ray workers.

Carbolic Acid Gangrene.—*Characteristics.*—Gangrene resulting from the injudicious use of phenol solutions on the fingers or from accidental spilling takes place slowly, often painlessly, and is not recognized until hours have elapsed. The affected part is at first dark gray or brown, and as the tissues dry and shrivel they grow darker, so that they become almost black. In a few days a line of demarcation is established between the dead and living parts, and there is some swelling of the latter. There may be a loss of the superficial skin only without permanent scars, or a part of the corium may be destroyed, or the deeper tissues, also including the bones.

Chief Signs.—History of use of phenol dressings or accidental acid burns.

Burns and Scalds.—*Characteristics.*—When extensive, burns or scalds cause sloughing of the tissues from moist gangrene.

Chief Signs.—History of burning or scalding.

Raynaud's Disease (*Symmetrical Gangrene*).—*Characteristics.*—The end of the finger or fingers becomes first white and anesthetic, then the part blackens and feels cold to the touch, and is very painful. The epidermis adjacent to the gangrene may be raised into blebs which rupture and expose dry surfaces. A line of demarcation forms and the necrosed area is removed as a slough. The gangrene may be symmetrical from the beginning, may be successive, or may remain asymmetrical. During the process of gangrene the pulse is detectable above the lesion.

Chief Signs.—Occurrence in winter; bilaterally of the symptoms; occurrence in attacks of three stages: Local syncope ("dead fingers or toes"); local asphyxia (parts blue, cold, painful); active hyperemia (parts red, hot, swollen, throbbing, painful); may have been history of mild attacks becoming severe.

Traumatic Gangrene.—*Characteristics.*—When the fingers of a hand are badly crushed, as by machinery mangling or other accident which devitalizes the tissues,

they may putrefy unless removed, and become affected with gangrene of the moist variety.

Pressure Gangrene.—*Characteristics.*—The gangrene resulting from careless bandaging is generally superficial (slough), but may extend deeply and widely if the parts become septic.

Chief Signs.—History of tight bandaging or splinting of the part.

Diabetes Mellitus.—*Characteristics.*—The type of gangrene occurring in the upper limb due to diabetes is usually a rapidly spreading cellulitis which results from an injury, perhaps a trivial one, which seldom forms pus, and which eventuates in moist gangrene. When the gangrene follows a traumatism there are no prodromal symptoms. When it arises spontaneously in the skin, it is often preceded by pain of a neuralgic character and attacks of livid or violaceous discoloration of the skin, with lowered surface temperature and sometimes loss of sensation. The gangrene is often superficial but may become deep if it follows an injury or ulceration.

Chief Signs.—Polydipsia, polyphagia, polyuria; glycosuria; hyperglycemia; may be acetone and diacetic acid in the urine in gangrene; tendency to coma during gangrene.

Felon (Whitlow).—*Characteristics.*—This is sometimes followed by gangrene of the soft parts at the end of the finger.

Chief Signs.—See page 328.

Cellulitis (From Infected Wound, Erysipelas, etc.).—*Characteristics.*—When an inflammation is about to terminate in gangrene all the signs of inflammation, local and constitutional, increase; swelling becomes very great, due perhaps partly to fluid and partly to gas, the latter causing crackling on pressure. The color becomes livid or purple. When gangrene is actually present the signs of inflammation have passed away, and bullæ and emphysema are noted, with great swelling (moist gangrene). When a wound becomes gangrenous the surface looks like yellow or gray tow, the discharge becomes profuse and very fetid, and the parts about swell enormously and gradually slough away.

Chief Signs.—History of wound or abrasion of the hand or finger; septic fever; enlarged axillary glands; may be lymphangitis; leukocytosis; sudden cessation of pain (very suggestive of gangrene).

Morvan's Disease.—*Characteristics.*—In this disease the fingers are the site of painless, destructive whitlows, which have their inception adjacent to the base of the nail, leading to necrosis of the terminal phalanges and marked swelling of the fingers. A finger may be lost as a result of this trophic disturbance of syringomyelia, of which Morvan's disease is but a special form.

Chief Signs.—See page 332.

Leprosy.—*Characteristics.*—As a result of injuries to anesthetic areas, secondary infection may occur, producing ulceration and gangrene.

Chief Signs.—See page 51.

Less Common Causes.—Ergotism; embolism or thrombosis; senile gangrene (endarteritis obliterans); thrombo-angiitis obliterans; postfebrile gangrene; ainhum; gas gangrene.

DEFORMITIES OF THE FINGERS

(See also "Deformities of the Hand," page 333; and "Swellings of the Hand and Fingers," page 330.)

Chronic Osteo-Arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics*.—The joints of the fingers may be involved as part of a general poly-arthritis. Monarticular involvement of the metacarpophalangeal joint of the thumb is common. There is nodular swelling of the joints affected, with muscular wasting and pain on movement during exacerbations. The movements are limited and there may be crepitus.

Chief Signs.—See page 737.

Dislocations of the Phalanges.—*Characteristics*.—There is an obvious error or irregularity in the bony alignment, while the range of motion of the joint is distinctly limited.

Chief Signs.—History of a blow on the finger-tip, or a fall; immobility; x-ray.

Fractures of the Phalanges.—*Characteristics*.—Deformity is usually slight.

Chief Signs.—History of injury; pain, swelling, immobility, crepitus, loss of function; x-ray.

Baseball Finger.—*Characteristics*.—One of the interphalangeal joints is tender and swollen, and a fusiform enlargement persists long after the injury which causes the deformity, usually the blow of a baseball on the palmar surface or end of the finger.

Mallet Finger.—*Characteristics*.—The distal phalanx of a finger droops as a result of rupture or overstretching of the end of the extensor tendon.

Dupuytren's Contraction.—*Characteristics*.—A permanent flexion of the little and ring fingers exists due to shortening of the palmar fascia. The first and second phalanges are flexed and the third extended. Less frequently the other fingers may be affected. The deformity may be bilateral. It occurs usually in middle-aged men with a history of rheumatic or gouty trouble.

Congenital Contraction of the Fingers.—*Characteristics*.—The little finger is the one usually affected. The first phalanx is hyperextended and the second and third flexed.

Tumors of the Phalangeal Bones (*Osteoma; Chondroma; Sarcoma; Metastatic Carcinoma*).—*Characteristics*.—These tumors all form nodular swellings of the finger. They are described separately under "Swellings of the Hand and Fingers," page 330.

Gout.—*Characteristics*.—The small joints of the hand may be the seat of small, periarticular, chalky masses, so-called tophi, the skin over which may slowly ulcerate, exposing the deposits. The tophi may exist in other situations, as the helix of the ear, extensor surface of the forearm, sclerotics, etc.

Chief Signs.—See page 640.

Syphilitic Dactylitis (*Spina Ventosa*).—*Characteristics*.—There is a fusiform enlargement of a phalanx, usually a proximal one, the color being purple. There may be softening and ulceration.

Chief Signs.—See page 332.

Tuberculous Dactylitis (*Spina Ventosa*).—*Characteristics*.—A flashlike expansion of the base of the affected finger is present.

Chief Signs.—See page 332.

Snap-Finger (*Trigger-Finger*).—*Characteristics*.—One or two fingers can be extended only by great effort or by using the other hand, when the finger flies out like the blade of a penknife. This is an acquired deformity.

Polydactylism.—*Characteristics*.—Supernumerary fingers may exist as a congenital anomaly. The superfluous member may be attached to the normal portion by skin only, or by bone.

Macroactylism.—*Characteristics*.—Congenital hypertrophy of one or more fingers is sometimes seen.

Ectrodactylism.—*Characteristics*.—One or more digits may be absent from birth.

Syndactylism.—*Characteristics*.—There are webs between the fingers. In the simple cases there is merely an extension of the normal web between the fingers; in severer cases the bones lie much closer together or may be fused.

Scleroderma (*Sclerodactyly*).—*Characteristics*.—The fingers, usually of both hands, become deformed, shortened, and atrophied. The skin becomes thickened, waxy, sometimes pigmented, and multiple calcareous nodules may occur.

Chief Signs.—See page 347.

Morvan's Disease.—*Characteristics*.—Painless whitlows develop as the result of neuritis or the neuritic form of syringomyelia. The hand and fingers may be considerably deformed.

Chief Signs.—Those of syringomyelia (see page 317); neuralgic pains; cutaneous anesthesia; trophic disturbances.

SKIN AFFECTIONS OF THE FINGERS

(See also "Skin Affections of the Palms and Soles," page 340; "Skin Affections of the Forearms and Hands," page 338; and "Skin Affections Involving the Finger-Nails," page 349.)

Skin affections of the palmar aspects of the finger present no special characteristics and are usually merely extensions of similar affections from the palms; the same relation holds true in reference to the dorsal aspect of the fingers and hands. The ends of the fingers, however, constitute a region of some special dermatological importance.

Chancre.—*Characteristics*.—The lesion is not typical. It is ordinarily situated at the side of the nail or at its base and causes enlargement of the end of the finger, producing a hard oblong tumor, the surface of which is red, squamous about the base, and sometimes discharging a little at the edge of the nail.

Chief Signs.—Occurrence usually in doctors and nurses; rapid development; enlarged epitrochlear glands; duration two and one-half months or more; presence of spirochetes; onset of secondary eruption; positive Wassermann.

Eczema (*Periungual*).—*Characteristics*.—Eczema may be confined to the ends of the fingers in the periungual region, being in reality an irritation dermatitis. The skin on the back of the fingers is thickened, red, and oozing, occasionally scaly,

and sometimes painful. The horny epidermis is destroyed or fissured. Another type affects the ends of the fingers and toes. There is marked hyperkeratosis on the backs of the fingers, at the ends, and under the free border of the nails, which are thickened, waxy, fissured, and painful. This type is a symmetrical keratoderma complicated by eczematization. A third type is part of a generalized eczema.

Chief Signs.—History of irritation; chronicity; itching.

Warts (*Verrucæ*).—*Characteristics.*—Warts are common on the backs of the fingers, and when located in the periungual region tend to undermine the nail and become especially troublesome.

Chief Signs.—See page 338.

Scleroderma (*Sclerodactyly*).—*Characteristics.*—The fingers are symmetrically involved, become deformed, shortened, and atrophied. The skin becomes thickened, of a waxy color, and sometimes pigmented. Multiple calcareous nodules may occur, and bullæ and ulcerations are present in some instances with deformities of the ends of the fingers and the nails.

Chief Signs.—Chronicity with winter exacerbations.

Tuberculosis (*Papillomatous and Lupoid*).—*Characteristics.*—The papillomatous variety consists of a round or oblong papillomatous patch, neoplastic, slightly elevated, warty, and hyperkeratotic, situated usually at the back of the last phalanx and fissure of the nail. In the latter situation its velvety granulomatous nature is evident. There may be a slight discharge. Periungual lupus is usually mistaken for chronic eczema. The nail seems raised by thickened fungosities, is painful on pressure, and discharges slightly. Around the borders yellowish tubercles may be visible under a glass slide.

Chief Signs.—Chronicity; biopsy.

Irritation Dermatosis (*Mechanical, Chemical, Thermic, X-ray, Solar, etc.*).—*Characteristics.*—The skin of the hands is frequently affected by irritations of many kinds, ranging from a mild erythema to a severe acute dermatitis or a chronic eczema. A careful inquiry into the etiology will often suffice to make the diagnosis. Erythema pernio or chilblains is one of the commonest of these.

Chief Signs.—History of local irritation; recovery after removal of the cause.

Less Common Causes.—Psoriasis (periungual); leprosy; traumatic cysts (on the palmar surface); dyshidrosis; spina ventosa; angiokeratoma; granuloma annulare.

ABNORMALITIES OF THE FINGER-NAILS

(*Onychosis*)

Certain constitutional diseases cause changes in the finger-nails of a nutritional or inflammatory nature. The nails may be absent, atrophic, or dystrophic from birth. They may be deformed from the habit of nail-chewing (onychophagia). All acute febrile disorders may affect the nutrition of the nails, which may show intermittent transverse thinning and transverse furrows. Skin affections involving the nails may cause deformity or abnormality (See "Skin Affections Involving the Finger-Nails," page 349).

Syphilis.—*Characteristics.*—Various types of onychia (nail inflammations) are

observed. Atrophic onychia is rather common in early syphilis. This affection is often multiple and bilateral. The nail may be thin, ragged, and brittle. Partial separation of the nail may occur, associated with palmar syphilids. The nail may become raised from its base or completely detached. Perionychia may occur in a dry form, the nail being surrounded by syphilids. In inflammatory perionychia the bed of the nail is inflamed, thickened, and very painful. The course is chronic and suppuration is rare. An indolent sore near the root of the nail with enlargement of the epitrochlear glands may be a primary syphilitic lesion (chancre).

Chief Signs.—See page 284.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—Abnormalities of the nails are extremely common. In the early stages the nails may have a marked pinkish color, and later are often livid or slightly cyanotic. There is usually an exaggeration of the normal curve from side to side, the nail appearing narrower than normal and often associated with a turning downward of the distal portion of the nail over the end of the finger. Longitudinal and transverse striations are quite common, the transverse striations often corresponding with exacerbations of the disease. An unusual change is the “oyster-shell” nail, the nail becoming loosened from its bed both laterally and distally, very brittle, and deformed by ridges and depressions.

Chief Signs.—See page 357.

Hypertrophic Pulmonary Osteo-Arthropathy.—*Characteristics.*—The nails are large and much curved, brittle, and striated.

Chief Signs.—See page 333.

Hyperhidrosis.—*Characteristics.*—The nails tend to grow upward rather than downward (“egg-shell nails”); their connection with the distal portion is weakened. The color is a delicate combination of white and purple.

Chief Signs.—Occurrence in debilitated young women; hyperhidrosis (excessive sweating).

Syringomyelia (*Spinal Gliosis*).—*Characteristics.*—The nails may be thickened, enlarged, and brittle. At other times they may be atrophic. They may dry up and drop off.

Chief Signs.—See page 317.

Arsenical Neuritis.—*Characteristics.*—Transverse ridging is common, but white lines running across the nails without any especial ridging may occur.

Chief Signs.—See page 311.

Exophthalmic Goiter.—*Characteristics.*—The nails often appear as if lifted from the matrix at their distal ends.

Chief Signs.—See page 95.

Less Common Causes.—Brachial neuritis; Raynaud’s disease; pellagra; arthritis deformans; myxedema; tabes dorsalis; diabetes mellitus (shedding); onychogryphosis; onychia; subungual tumor; leukonychia; koilonychia; onychorrhaxis; onychomadesis; onychoschizia; gout.

CAPILLARY PULSATION UNDER THE NAILS

Capillary pulsation is usually demonstrated by pressing the finger-nail at its distal end so that the base of the nail remains pink and the anterior portion

blanched, and watching the alternating reddening and pallor of the paler portion with each beat of the heart; or by transillumination through the finger pulp with an electric light. The capillary pulse can be observed at any place where an area of erythema borders on an area of pallor, as for example along the margin of an area of skin which has been caused to redden by slight friction; or in the lips or gums when gently compressed with a glass slide. Sometimes in health this phenomenon may be present and occasionally in anemia. It is likewise seen in cases of severe hemorrhage. In hypertonicity of the sympathetic nervous system, or sympathicotonia, capillary pulsation is often demonstrable.

Aortic Regurgitation.—*Characteristics.*—Capillary pulsation is often marked, and is always looked for as confirmatory evidence of this lesion.

Chief Signs.—See page 453.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics.*—The capillary pulse is readily seen, and the venous pulse in the veins of the hands may be distinctly visible.

Chief Signs.—See page 450.

Less Common Causes.—Arteriosclerosis with pseudo-aortic insufficiency; chronic pulmonary tuberculosis; neurosis ("neurasthenia").

SKIN AFFECTIONS INVOLVING THE FINGER-NAILS

Pigmentary or degenerative changes may occur as the result of occupation.

Pterygium.—*Characteristics.*—The fold of skin at the base of the nail adheres to and grows over the nail like a wing.

Eczema.—*Characteristics.*—The first sign usually is pitting, so that the nails resemble orange-rind. They become discolored and thinned, and transverse and longitudinal splitting follows, or in long-standing cases thickening to the extent of deformity. Chronic eczematoid perionychosis occurs usually as a local irritation dermatosis. The nail is eroded, its surface roughened, and its substance soft. Pressure is painful because of concomitant infection. In severe types the nail may be elevated by the secretions and may fall off, and the nail-bed becomes covered by horny matter or vesicles.

Chief Signs.—Usual history of chronic irritation.

Paronychia.—*Characteristics.*—The tissue just over the base of the nail or at the sides is reddened and swollen, tender and painful. There is usually but a moderate amount of pus formation. The nail may later be shed.

Psoriasis.—*Characteristics.*—It usually begins with a brownish horny thickening under the outer margins or free border of the nails, and the horny thickening then appears under the nail as a yellow plaque. When the lesion is accessible and can be scratched with a needle, small micaceous horny debris are removed, leaving a lenticular open space. In some cases the external table of the nail may come off or it may become striated like an oyster shell. The loss of the nail is not permanent.

Chief Signs.—Usually association with lesions elsewhere.

Tinea Unguium (*Ringworm*).—*Characteristics.*—One or more finger-nails may be attacked. Infection is usually primary in the nail-bed, so that the space beneath the nail is occupied by a mass of horny cellular detritus often several millimeters

thick. The nails become lusterless, opaque, and brittle, and split and crack and are often thrown into ridges.

Chief Signs.—Presence of the trichophyton microscopically.

Favus.—*Characteristics.*—The lesions are similar to those of tinea unguium, except that the granular detritus may have a more or less pronounced yellowish color.

Chief Signs.—Demonstration of the *Achorion schænleini*; presence of favus on the scalp or body elsewhere.

Less Common Causes.—Leprosy; epidermolysis bullosa; pemphigus; dermatitis herpetiformis; pityriasis rubra pilaris; pityriasis rubra; alopecia totalis.

THE PULSE

With the increase in the past decade of knowledge of the direct physical examination of the heart, of the various methods of measuring the blood-pressure on the peripheral arteries, the perfection of the photographic visualization of the heart movements by means of the electrocardiograph, the examination of the pulse has come to occupy a subsidiary position in the diagnosis of cardiovascular diseases. But notwithstanding these newer methods, palpation of the radial pulse still remains and will remain a necessary and important feature of the physical examination of the patient. As we feel the pulse we get at once a fact of great central importance in the case; by the pulse the steps of subsequent examination, prognosis, and treatment are graded. In emergencies or accidents, the pulse gives us our bearings and tells us whether or not the patient's condition is one demanding immediate succor—*e. g.*, hypodermic stimulation. Finally, there are a few important inferences which palpation of the peripheral arteries (the pulse) can alone enable us to make, as, for example, inequality in the pulse on the two sides, and degeneration (thickening) of the arterial wall. Conclusions regarding the "strength" or "weakness" of the circulation can sometimes be drawn from feeling the pulse and noting whether it be "hard" or "soft," especially if this be marked in degree, but the final test will remain in taking the blood-pressure with an accurate instrument, the sphygmomanometer. Likewise, it can usually be determined whether the pulse is fast, slow, or irregular, but much more reliable information of these features and their meaning can be obtained by stethoscopic examination of the heart itself and by instrumental means, so that examination of the heart is always combined with palpitatory examination of the pulse.

The following points are to be noted in examining the pulse:

1. The rate of the pulse.
2. The rhythm of the pulse.
3. The amount of force necessary to obliterate it (compressibility).
4. Volume of the pulse.
5. Shape of the pulse wave.
6. The size and position of the artery.
7. The condition of the artery walls.
8. Bilateral symmetry of the pulses.

1. In the adult male the pulse averages 72 to the minute, in the female 80. In children it is considerably more frequent. At birth it averages about 130, and until

the third year is usually above 100. Abnormalities of the rate (tachycardia and bradycardia) are considered on pages 443 and 445.

2. The pulse may be irregular in force, in rhythm, or in both respects (see "Irregular Pulse," page 352).

3. The force of the pulse, corresponding to the systolic pressure as determined by the sphygmomanometer, and the tension of the pulse, or diastolic pressure, may be somewhat comprehended in the first instance by the degree of compression necessary to obliterate the pulse, and in the second instance by estimating the force necessary to bring out the greatest impact of the pulse beats. A hard pulse, or one difficult to compress, indicates hypertension, and a soft pulse, or one easily obliterated, suggests hypotension; but these elements are more accurately determined by instrumental means (see "Blood-Pressure, High," page 668, and "Blood-Pressure, Low," page 669).

4. Increase of the pulse volume (*pulsus magnus*) commonly attends conditions provocative of subnormal arterial tension, and is recognized by the palpating finger as an unnatural expansion of the vessel at the time of the pulse beat. The full, bounding pulse of fevers, the large pulse of cardiac overaction or hypertrophy, and the momentarily voluminous pulse of aortic regurgitation typify the *pulsus magnus* (see "Cardiac Hypertrophy," page 437). Overfullness of the artery during the interval between beats (*pulsus plenus*) indicates a large volume of blood within the vessel, irrespective of its size; but a small, tense, contracted artery may be just as full, relatively, as one which is large, soft, and relaxed. Diminution of the pulse volume (*pulsus parvus*) is attended by but slight stretching of the vessel walls during the beat, and is not infrequently combined with arrhythmia and with increased arterial tension. A small pulse may depend upon deficient cardiac force, or upon lesions that diminish the volume of blood in the peripheral vessels, the former accounting for the subnormal pulse volume in collapse, conditions of malnutrition and exhaustion, and in the various functional and structural weaknesses of the heart; the latter for the small pulse of aortic and mitral stenosis, aneurysm, and profound anemia.

5. The shape of the pulse wave is best determined by polygraphic tracings, though some idea may be obtained by palpation of the pulse. Thus, in aortic regurgitation, the wave rises and falls back again suddenly; a weak heart with low arterial tension often produces such a wave (bounding pulse of infectious processes); and a somewhat similar pulse is present in many cases of arteriosclerosis and hyperthyroidism. The opposite type of pulse wave, rising and falling slowly and of relatively long duration, is most distinctly exemplified by the pulse of aortic stenosis (*pulsus rarus, parvus, and tardus*), but is also seen in some cases of mitral stenosis and renal disease. The dicrotic pulse wave presents an exaggeration of the normal dicrotic wave, as well shown in febrile states (especially typhoid fever) and exhaustions, uncompensated mitral regurgitation, and posthemorrhagic anemia. Other modifications of the normal wave (*pulsus anacroticus, pulsus bisferiens*) are determined by sphygmographic tracings.

6. The size and position of the artery depends upon the degree of contraction of the artery, degenerative changes, and its anatomical setting.

7. The condition of the artery walls depends upon the degree of elasticity or hardening. Arteriosclerosis is manifested in the peripheral arteries, especially the

brachial, by simple stiffening without calcification, by tortuosity, or by calcification with beading of the surface. A contracted artery of high vascular tension is difficult to distinguish from simple stiffening due to sclerosis.

8. The symmetry of pulses is determined by simultaneous palpation of the pulses in both arms (see "Inequality of the Pulses," page 354.)

IRREGULAR PULSE

(See also "Cardiac Arrhythmia (Forms of)," page 447; and "Cardiac Arrhythmia (Causes of)," page 448.)

It is important to examine both heart and pulse; of the two, more may be learned from the heart.

Auricular Fibrillation.—*Characteristics.*—The pulse is irregular in rhythm and strength of the beats. The irregularity is absolute, there being no predominant rhythm. The pulse rate may be considerably slower than the ventricular rate, as many of the weaker beats may not open the aortic valves or may not be sufficiently strong to send a wave to the wrist (pulsus deficit). These signs are more pronounced when the ventricular rate is fast, as it most often is; but when slow, with a considerable degree of A.V. blocking, there may be little variation in the force and rhythm.

Chief Signs.—See page 447.

Premature Contractions (*Extrasystoles*).—*Characteristics.*—Premature beats may be single or multiple, and may recur at regular or irregular intervals. The pulse, however, shows, in spite of these interruptions, a rhythm which dominates the action as a whole. The premature beat is a small beat, is often followed by a compensatory pause (especially in ventricular extrasystoles), and the beat next following the pause is often increased in magnitude. If the beat is too feeble to open the aortic valves or to reach the wrist it will be denoted in the pulse by a pause (intermission). If the premature contractions occur regularly after every second beat and fail to reach the wrist, or if they occur regularly after every normal beat and do reach the wrist, a bigeminal pulse is produced (two beats and a pause); in the second instance a full beat is followed after an abnormally short pause by a small beat and a long pause.

Chief Signs.—See page 447.

Sinus Arrhythmia.—*Characteristics.*—Short periods of irregularity are very common, especially in children and nervous subjects. In many cases this irregularity goes on with each respiration: there is a quickening of the pulse with inspiration and a subsequent slowing as expiration takes place. While not all examples of sinus arrhythmia show a regular variation with normal respiration, yet deep breathing or swallowing may be shown to influence them, and they are abolished when the rate is made rapid. The apex shows the same variation in rhythm as the pulse and is of the same rate as the latter; there is no great difference in the force of individual beats.

Chief Signs.—See page 447.

Partial Heart-Block.—*Characteristics.*—The character of the irregularity will depend upon the frequency and regularity of the dropped beats, *i. e.*, upon the

frequency and regularity with which auricular impulses are blocked. If the impulses reach the ventricle at irregular intervals there will be irregularly recurring pauses in the pulse beats without alteration of the force or rhythm otherwise. If every second impulse from the auricle fails to reach the ventricle, there is no irregularity; if every third auricular impulse is blocked, the *pulsus bigeminus* results, two regular beats being followed by a pause equivalent to one cardiac cycle; while if every fourth impulse is blocked *pulsus trigeminus* results, etc. Transitions from one form to another are not uncommon, and a considerable increase of pulse rate, as by exercise, usually causes the disappearance of partial blocking and produces regularity of the pulse.

Chief Signs.—See page 448.

Pulsus Alternans.—*Characteristics.*—This regular irregularity may sometimes be great enough to be appreciated in the pulse. The beats occur at regular intervals, but every other one is weaker.

Chief Signs.—See page 448.

Auricular Flutter.—*Characteristics.*—The pulse is usually regular, but irregularity is not infrequent, since the blocking of auricular impulses does not always take place regularly. Exercise, however, of small amount may cause the disappearance of this irregularity, and produce the unvarying rate which is characteristic of auricular flutter.

Chief Signs.—See page 448.

Pulsus Paradoxus.—*Characteristics.*—Toward the completion of inspiration the heart beats become feeble and are apt to be imperceptible at the wrist. This is, however, a rare observation.

Chief Signs.—Occurrence during the extreme inspiratory dyspnea attending laryngismus stridulus, in pericarditis with effusion, chronic adhesive pericarditis, or mediastinal inflammation or tumor.

HALVING OF THE PULSE RATE

The pulse rate may suddenly drop to exactly one-half of its original rate, though this is rare.

Premature Contractions (*Extrasystoles*).—*Characteristics.*—An exact halving of an observed pulse rate may be produced by the occurrence after every normal beat of a ventricular premature contraction too weak to reach the wrist.

Chief Signs.—See page 447.

Partial Heart-Block.—*Characteristics.*—An abrupt doubling or halving of the rate is very suggestive. The probability increases if transitions to other forms of partial block occur.

Chief Signs.—See page 448.

Auricular Flutter.—*Characteristics.*—The rate may suddenly drop to one-half its previous rate by a change from a 2:1 auricular flutter to a 4:1 type.

Chief Signs.—See page 448.

Pulsus Alternans.—*Characteristics.*—Rarely, when *pulsus alternans* of extreme degree sets in, the difference in force between the larger and smaller alternating beats is so great that the pulse rate is halved, the weaker beats not being palpable.

Chief Signs.—See page 448.

INEQUALITY OF THE PULSES

Inequality of the two pulses may be a perfectly natural phenomenon; one frequently finds that the radial arteries of the two sides are not of the same caliber, owing to variable degrees of collateral circulation by an enlarged *comes nervi mediani*. Inequality of the pulses is a much more important sign when known to have developed in a patient whose pulses were formerly normal. The inequality may show itself either in a definite delay of one behind the other or in a difference in strength.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—If the sac involves the great vessels given off from the transverse portion of the arch, the radial (and carotid) pulses on one side may differ from those on the opposite side. If, for instance, the innominate artery is compressed or its opening is partially blocked by clot, the right radial pulse will be smaller than the left. In the same way the opening of the left subclavian may be involved, thus giving rise to a smaller pulse in the left radial. Rarely the radial pulse may be obliterated on both sides.

Chief Signs.—See page 275.

Cervical Rib.—*Characteristics.*—If the condition is unilateral, there may be pressure upon and consequent stenosis of one subclavian artery, thus producing an inequality of the pulses on the two sides; or if it be bilateral, it usually predominates on one side, and the more prominent rib may press upon the artery of that side with the same result.

Chief Signs.—See page 271.

Less Common Causes.—Embolism of the brachial artery; atheroma of the brachial or subclavian artery; mediastinal tumor; aneurysm of the subclavian, axillary, or brachial artery; aneurysm of the innominate artery; fracture of the arm; cicatrices of the arm; tumor or enlarged glands of the axilla; pneumothorax; pleural effusion (large).

COLLAPSING PULSE

(*Corrigan's Pulse*)

Aortic Regurgitation.—*Characteristics.*—The pulse wave rises suddenly and with extraordinary force, strikes the palpating finger with a momentary shotlike impact, and then instantly collapses. This collapsing character is exaggerated by raising the subject's arm vertically above the head. The diastolic pressure is always low (60–40 mm. Hg.), and the systolic pressure generally high (180–140 mm. Hg.). This type of pulse may be simulated by the bounding pulse of early infectious processes, many cases of arteriosclerosis, and hyperthyroidism.

Chief Signs.—See page 453.

THE THORAX OR CHEST

SYMPTOMS	PAGE
Cough (Including Characteristics of the Sputum).....	357
Hemoptysis (Bronchopulmonary Hemorrhage).....	363
Pain in the Sternal Region	365
Precordial Pain	367
Pain in the Side of the Chest.....	369
Localized Tenderness of the Chest.....	371
Deformities of the Chest.....	373
Asymmetry of the Chest.....	376
Bulging of the Precordia.....	377
Localized Swellings of the Chest-Wall.....	377
Sores on the Chest-Wall.....	379
Bulging or Obliteration of the Intercostal Spaces	379
Retraction of the Intercostal Spaces.....	380
Edema of the Chest-Wall.....	381
Enlarged Veins of the Chest-Wall.....	381
Pain in the Breast.....	382
Swellings of the Breast.....	383
Discharge from the Nipple.....	385
Skin Affections of the Chest.....	385
Herpes Zoster (Shingles; Zona).....	387
Impaired Mobility of the Chest, Unilateral or Bilateral (Including Litten's Phenomenon)	388
Dyspnea (Including Polypnea).....	391
Slow Respiration (Oligopnea).....	396
Stridor (Stridulous Breathing).....	397
Stertorous Respiration	399
Cheyne-Stokes Respiration (and Irregular Respiration).....	400
Increased Vocal or Tactile Fremitus.....	402
Diminished Vocal or Tactile Fremitus.....	403
Pleural Friction Fremitus.....	404
Dulness or Flatness on Percussion.....	405
Hyperresonance or Tympany on Percussion.....	409
Bronchial Breathing (Tubular Breathing).....	412
Cavernous and Amphoric Breathing.....	414

Prolonged Harsh Expiration.....	415
Puerile or Exaggerated Breathing.....	415
Weak or Absent Breath Sounds.....	416
Bronchophony (Increased Vocal Resonance).....	418
Râles	419
Pleural Friction Sound.....	422
Succussion Sound	423
Serous Effusion in the Pleural Cavity (Aspiration).....	423
Bloody Effusion in the Pleural Cavity (Aspiration) and Hemothorax...	425
Purulent Effusion in the Pleural Cavity (Aspiration).....	425
Displaced Apex Beat.....	426
Forcible Apex Beat.....	428
Feeble or Absent Apex Beat.....	429
Diffuse Apex Beat.....	429
Abnormal Pulsations in or near the Precordia.....	430
Thrills in the Precordia.....	432
Friction Fremitus over the Precordia.....	434
Increased Area of Cardiac Dulness.....	434'
Decreased Area of Cardiac Dulness.....	436
Increased Intensity of the Cardiac Sounds.....	436
Cardiac Hypertrophy	437
Decreased Intensity of the Cardiac Sounds.....	438
Accentuation of the First Sound at the Apex.....	439
Enfeeblement of the First Sound at the Apex.....	439
Accentuation of the Aortic Second Sound.....	439
Enfeeblement of the Aortic Second Sound.....	440
Accentuation of the Pulmonic Second Sound.....	441
Enfeeblement of the Pulmonic Second Sound.....	442
Reduplication of the Cardiac Sounds.....	442
Tachycardia (Rapid Heart).....	443
Bradycardia (Slow Heart).....	445
Cardiac Arrhythmia, Forms of.....	447
Cardiac Arrhythmia, Causes of.....	448
Cardiac Murmurs	451
Mitral Area Murmurs.....	451
Aortic Area Murmurs.....	453
Pulmonic Area Murmurs.....	455
Tricuspid Area Murmurs.....	456
Cardiorespiratory Murmurs	456
Precordial Friction Sound.....	457
Palpitation of the Heart.....	458

Heartburn (Pyrosis; Cardialgia).....	460
Girdle Sensation	461

See also "Pain in or Radiating from the Spine," page 540.

COUGH

(Including Characteristics of the Sputum)

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics*.—Cough is usually the first symptom that the patient notices. At first it may be confined to the morning on awakening, or it may occur only intermittently throughout the day. In other cases it is most marked on going to bed. As the disease progresses, the cough becomes more and more severe and tends to become paroxysmal. In the early stages the expectoration is slight in amount, but later becomes more and more profuse, especially as cavities form. The sputum has no distinctive characteristics except in cavitation, when it is nummular (grayish or greenish-gray balls). It may be glairy, yellowish or greenish, specked or streaked with blood, or reddish due to intimately mixed blood.

Chief Signs.—Insidious onset; loss of weight, strength, and appetite; pallor; may be hemoptysis; night sweats; afternoon pyrexia; rapid pulse; crepitant râles at one apex brought out by coughing (incipient stage), with changes in the breath sounds and slightly impaired resonance; diminished expansion; later, signs of consolidation or cavitation, and extension to the other apex; tubercle bacilli in the sputum; tuberculin test; x-ray.

Acute Bronchitis.—*Characteristics*.—The cough is rough, ringing, racking, paroxysmal, at first dry with scanty, viscid expectoration, becoming in a few days abundant and mucopurulent or purulent.

Chief Signs.—Symptoms of "cold"; slight fever; tightness or rawness under the sternum; bilateral ephemeral râles, first dry, then moist.

Influenza (*Respiratory Form*).—*Characteristics*.—The cough is at first dry with scanty expectoration, later the sputum is abundant and contains greenish-yellow purulent masses or coinlike clumps. In other cases there may be a dark red, bloody sputum.

Chief Signs.—Coryza and catarrhal symptoms; prostration; fever; pain in the back and bones; scattered râles in the lungs; may be pleuritic and pneumonic complications; duration about a week; relapses common; great depression following the acute attack.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics*.—A short, dry, painful cough is present in the beginning, without any expectoration. Later it becomes frequent, short, restrained, and associated with great pain in the side; sputum is then brought up. At first the sputum is mucoid, but it soon becomes blood-tinged, viscid, and very tenaceous. In low types of the disease it may be fluid and of a dark brown color ("prune-juice sputum"). In old persons, drunk-

ards, terminal pneumonias, and sometimes in young children, there may be no cough.

Chief Signs.—Acute onset with rigor and fever; pain in the side; short, rapid respiration with expiratory grunt; face flushed and the eyes bright; herpes labialis; pulse full and bounding (pulse-respiration ratio often two to one); temperature around 104 degrees, terminating by crisis between the fifth and tenth days; physical signs of lobar consolidation (dulness, bronchial breathing, bronchophony), later râles redux; leukocytosis.

Bronchial Asthma.—*Characteristics.*—The attack often ends with a paroxysm of coughing. The sputum at first occurs in the form of small grayish pellets, but it gradually becomes more copious and changes from a tenaceous mucus to a thin, frothy material which may be blood-streaked. Microscopically the sputum contains many eosinophils, Charcot-Leyden crystals and Curschmann's spirals.

Chief Signs.—Onset commonly under ten years, persisting to old age; recurring paroxysms. Paroxysm:—sudden onset, frequently nocturnal; violent respiratory movements with all the accessory muscles; short inspiration with long, wheezy expiration; slow respiration; cold sweat; small pulse; hyperresonance; numerous râles and noises; cough at the end with expectoration of viscid sputum containing Curschmann's spirals, eosinophils, and Charcot-Leyden crystals; eosinophilia. Interval:—may be bronchitis and emphysema; may be associated hay fever.

Whooping-Cough (*Pertussis*).—*Characteristics.*—The dry bronchial cough of the catarrhal stage is followed by a characteristic cough in the later stage, which is paroxysmal, occurring in fits of fifteen or twenty short, forcible coughs of increasing intensity. Following this series of short expiratory barks comes a deep inspiration, the "whoop." The face becomes cyanotic and congested during the paroxysm. The coughing spells are more frequent at night. They may be followed by vomiting.

Chief Signs.—Occurrence in children; epidemicity; insidious onset with coryza, cough, and mild fever; may be hemorrhages; lymphocytosis; duration six to eight weeks.

Measles (*Morbilli*; *Rubeola*).—*Characteristics.*—There is always an irritable cough accompanied by sneezing, rhinorrhea, and conjunctival irritation.

Chief Signs.—See page 194.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics.*—There may be cough in the beginning, due to passive congestion of the lungs; later, as pulmonary edema develops, there is a bloody or watery expectoration with an incessant cough. The sputum is charged with blood-pigment, both free and contained within the alveolar epithelial cells, the so-called "heart-failure cells."

Chief Signs.—Dyspnea; orthopnea; may be cyanosis (mitral disease); dropsy, first in the dependent parts; hydrothorax; ascites; enlarged liver; scanty urine; enlarged heart; murmurs; irregularities; weak first sound.

Pulmonary Edema.—*Characteristics.*—There is an incessant short cough, with copious, frothy, sometimes blood-tinged expectoration; it may be expelled in a gush from the mouth and nose.

Chief Signs.—Dyspnea or orthopnea; pallor; sweat; feeble pulse; piping and bubbling râles over the entire chest; basal dulness; evidence of cardiac weakness.

Hay-Fever.—*Characteristics.*—Cough is a common symptom and may be very distressing.

Chief Signs.—Seasonal occurrence (spring and autumn); frequent sneezing; running at the nose; lachrimation; may be bronchial asthma; demonstration of pollen sensitization (skin tests).

Acute Catarrhal Laryngitis.—*Characteristics.*—There is a dry cough with harshness and weakness of the voice. There may be a slight mucoid sputum, often streaked with blood.

Chief Signs.—Sense of tickling; painful phonation; mild fever; may be painful swallowing and pain over the larynx; may be dyspnea in children; laryngoscopy (red, swollen cords).

Chronic Bronchitis.—*Characteristics.*—The cough is chronic and variable, changing with the weather (worse in the winter); there may be morning or night exacerbations. There may be an abundant mucopurulent sputum, a thin sputum, or no sputum (dry form).

Chief Signs.—Chronicity; occurrence usually in old men; dyspnea on exertion; usually emphysema; prolonged, wheezy expiration; sibilant or snoring rhonchi; crepitant râles common at the bases.

Hypertrophic Emphysema.—*Characteristics.*—The cough and expectoration vary greatly, but resemble in general that of chronic bronchitis (see above) with which it is usually associated. There may be no cough during the summer months.

Chief Signs.—See page 374.

Bronchopneumonia (*Capillary Bronchitis; Lobular Pneumonia*).—*Characteristics.*—There is a hard, distressing, painful cough, with a thin mucoid or mucopurulent sputum, sometimes blood-tinged. A vigorous cough is a favorable sign. In children the sputum is usually swallowed.

Chief Signs.—Preceding bronchitis, acute fever, debility, or chronic disease (may be primary under two years); gradual onset; rapid respiration; rapid pulse; fever 102° F. to 104° F., falling by lysis usually in two or three weeks; bilateral, fine râles, but no definite dulness; later louder râles; leukocytosis.

Bronchiectasis (*Dilatation of the Bronchi*).—*Characteristics.*—There is a daily spell of coughing, usually in the morning, with a severe paroxysm and the raising up of large quantities of grayish or grayish-brown fetid sputum which separates into three layers in a conical glass, the bottom layer containing Dittrich's plugs.

Chief Signs.—History of chronic lung trouble; may be contraction of the side; chronicity; may be changing signs of cavity (amphoric resonance); cyanosis on exertion; clubbed fingers; may be mild hemoptysis.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—There may be a paroxysmal cough with a peculiar brazen, ringing character, or it may have a peculiar wheezy quality ("goose cough"); it is accompanied by expectoration, first watery, then thick (bronchitis). The voice is husky and weak, or there may be aphonia. In other cases it is merely that of a bronchitis.

Chief Signs.—See page 367.

Mitral Stenosis.—*Characteristics.*—There are often attacks of coughing and expectoration from time to time even before there is much decompensation. The sputum may be blood-streaked.

Chief Signs.—See page 433.

Fracture of the Ribs.—*Characteristics.*—There may be a painful unproductive cough if there is displacement of the fragments or laceration of the lung.

Chief Signs.—History of injury to the chest; pain; tenderness; sometimes crepitus; abnormal point of motion; pain on compression of the chest; x-ray.

Abscess of the Lung (Single).—*Characteristics.*—Cough and some expectoration are present, and the sputum is blood-streaked; a definite hemoptysis is common. The sudden expectoration of a large quantity of sweetish purulent sputum is pathognomonic. This may be repeated from time to time with smaller amounts each time. The sputum contains elastic tissue.

Chief Signs.—History of a preceding tonsillectomy, pneumonia, or the inhalation of a foreign body; intermittent fever; chills, sweats, leukocytosis; physical signs not distinctive but may be those of cavity after the evacuation; may be rapid development of clubbed fingers; x-ray.

Acute Pleurisy.—*Characteristics.*—Cough is an early symptom usually, with only a slight amount of mucoid or blood-streaked sputum. The cough aggravates the pain in the side.

Chief Signs.—Acute onset with pain in the side; dyspnea; fever; pleural friction rub (lower axillary region); later, may be signs of pleural effusion.

Pulmonary Infarction.—*Characteristics.*—A cough usually develops on the second day, which is unproductive or associated with a frothy sputum, at times blood-tinged.

Chief Signs.—Presence of valvular heart disease, phlebitis, or previous operation; sudden sharp pain in the side; abrupt rise of fever and pulse rate; pleural friction if large; impaired resonance and tubular breathing (circumscribed).

Acute Miliary Tuberculosis (Pulmonary Form).—*Characteristics.*—The cough is marked, the expectoration mucopurulent, occasionally rusty.

Chief Signs.—History of chronic cough or preceding infection (in children); may be dyspnea and cyanosis; signs of diffuse bronchitis; may be inverse fever; rapid wasting; palpable spleen; tubercle bacilli in the sputum; ophthalmoscopy (choroid tubercle); x-ray (bilateral, diffuse peppering of the lungs); death in one to six weeks.

Tuberculous Laryngitis.—*Characteristics.*—The cough at first is not very troublesome, but later when ulceration is extensive, it is more marked, and is very painful, husky, and ineffectual.

Chief Signs.—Hoarseness; aphonia; pain on swallowing; presence of pulmonary tuberculosis; laryngoscopy (pale mucous membrane, ulceration).

Diphtheria (Membranous Croup).—*Characteristics.*—There is at first a slight hoarseness with a rough cough (croupy) and inspiratory stridor.

Chief Signs.—See page 394.

Spasmodic Croup (Spasmodic Laryngitis).—*Characteristics.*—Preceding the attack there is a slight cough. This becomes worse at night and of a barking character, and the child awakes with a crowing inspiration and a croupy cough.

Chief Signs.—Occurrence between two and four years; nocturnal attack with oppressed respiration and the croupy cough; duration a half to three hours; may be recurrence for two or three nights.

Adenoids.—*Characteristics.*—Occasionally there is a paroxysmal cough of troublesome character, usually increased by lying down; it is more frequent at night, but may occur during the day.

Chief Signs.—Nasal catarrh; mouth-breathing; disturbed sleep; deafness; chest

deformities (Harrison's groove); backward development; examination of the nasopharynx (finger or nasopharyngoscope).

Acute Pneumonic Tuberculosis, Lobar Form (*"Gallopig Consumption"*).—*Characteristics*.—There is a suppressed cough with expectoration of a blood-tinged or typical rusty sputum, which becomes purulent later.

Chief Signs.—Acute or subacute onset; symptoms and physical signs of lobar pneumonia without crisis; irregular temperature; rapid pulse; rapid wasting; prostration; persistence of consolidation, followed by cavitation; tubercle bacilli in the sputum; gradual failure and death (usually about two months).

Acute Tuberculous Bronchopneumonia (*"Gallopig Consumption"*).—*Characteristics*.—A slight cough is present at the onset, which becomes progressively worse and the sputum more and more abundant. The latter is at first mucoid but becomes yellowish or greenish in color and may be streaked with blood.

Chief Signs.—Abrupt onset; rigors; dyspnea; high hectic temperature; rapid pulse; sweats mainly at night; wasting; physical signs of diffuse bilateral bronchitis; later areas of consolidation, especially at the apices; typhoid state; tubercle bacilli in the sputum; x-ray; death in three weeks to two months.

Tuberculous Adenitis (*Tracheobronchial*).—*Characteristics*.—There is a paroxysmal, often brassy cough, which may be mistaken for whooping-cough.

Chief Signs.—Occurrence usually in children; slight fever; wasting; anorexia; dulness over the manubrium sterni; distended veins of the neck; venous hum on retracting the head; signs of pressure on the bronchi; x-ray (mediastinal shadow).

Fibroid Phthisis.—*Characteristics*.—There is a paroxysmal cough with a copious expectoration of a mucopurulent or seropurulent nature, sometimes fetid, and most marked in the morning.

Chief Signs.—Chronicity; may be bronchiectasis; hemoptysis; dyspnea on exertion; affected side immobile, retracted, shrunken; physical signs of consolidation (wooden resonance and hyperresonance, bronchophony, bronchial and amphoric breathing, apical râles); cardiac displacement toward the affected side; tubercle bacilli in the sputum; x-ray.

Chronic Interstitial Pneumonia (*Cirrhosis of the Lung*).—*Characteristics*.—There is a chronic, paroxysmal cough, with copious expectoration of a mucopurulent or seropurulent sputum, sometimes fetid.

Chief Signs.—History of previous pneumonia or some chronic lung disease; chronicity; slight dyspnea on exertion; hemoptysis; may be bronchiectasis; affected side immobile, contracted, shrunken; signs of consolidation or cavitation, with emphysema of the opposite side; cardiac displacement toward the affected side; absence of tubercle bacilli in the sputum; x-ray.

Hilus Tuberculosis.—*Characteristics*.—There is a chronic spasmodic, non-productive cough.

Chief Signs.—Slow, persistent, insidious course; attacks of pleurisy; intermittent attacks of fever; little impairment of health; retraction and dulness at both apices, increased area of dulness over the roots of the lungs (interscapular and sternal); x-ray (increase in hilum shadows and prominence of the bronchial tree).

Gangrene of the Lung.—*Characteristics*.—Cough is usually present and often paroxysmal in character. Hemoptysis may be the first sign. The sputum is characteristic; it has a horribly fetid odor and separates into three layers in a

conical glass (froth, greenish fluid, and greenish sediment containing elastic fibers).

Chief Signs.—History of preceding lung disease or injury to the lung; insidious onset; extreme prostration; variable fever slight or hectic; physical signs not distinctive; usually death.

Inhalation of Poisonous Gases.—*Characteristics.*—There is cough due to the irritation, and there may be expectoration of thick yellow sputum containing blood. A chronic cough may follow.

Chief Signs.—History of inhalation; dyspnea; a sense of compression in the chest; faintness; may be cyanosis.

Pneumoconiosis.—*Characteristics.*—There is a chronic cough with profuse expectoration of black or colored material.

Chief Signs.—Occupation (miner, stonecutter, etc.); chronic failing health; wheezy dyspnea; signs of fibrosis of the lungs or cavitation; x-ray.

Congenital Heart Disease.—*Characteristics.*—A cough frequently accompanies the dyspnea which occurs on exertion.

Chief Signs.—Occurrence in childhood; may be cyanosis; dyspnea on exertion; physical signs depending on the nature of the lesion.

Carcinoma of the Lung.—*Characteristics.*—A chronic cough is usually present, but is not distinctive, and may resemble that of pneumonia, tuberculosis, or pleurisy. The sputum may be mucoid, mucopurulent, blood-streaked, or hemorrhagic. Sometimes it resembles currant jelly; this is very suggestive of malignant disease.

Chief Signs.—Presence or history of carcinoma elsewhere; signs first at the root of the lung; round, fatty cells in the sputum, may be blood; may be effusion; glandular involvement; absence of tubercle bacilli in the sputum; x-ray; cachexia rapid.

Goiter.—*Characteristics.*—Cough with marked stridor may persist for years.

Chief Signs.—Enlargement of the thyroid gland; pressure symptoms.

Mediastinal Tumor.—*Characteristics.*—There may be a severe paroxysmal cough, often with dyspnea, and with a brazen quality (when a recurrent laryngeal nerve is involved).

Chief Signs.—Dyspnea; pressure symptoms (dysphagia, stridor, dilated veins of the neck and thorax, cyanosis of the upper parts of the body); physical signs (substernal dullness, absent vocal resonance, effusion); history of a growth elsewhere; x-ray.

Hodgkin's Disease.—*Characteristics.*—There may be cough attended by dyspnea and cyanosis, with signs of intrathoracic tumor.

Chief Signs.—Enlargement of the lymph glands (discrete like marbles); progressive anemia; biopsy.

Pericarditis with Effusion.—*Characteristics.*—An irritative cough occurs due to pressure on the trachea.

Chief Signs.—Occurrence in rheumatic fever, septicemia, pneumonia, tuberculosis, chronic diseases; dyspnea; precordial pain; anxious, dusky face; rapid, small pulse; pulsus paradoxus; pressure symptoms (dysphagia, aphonia, venous engorgement of the neck); bulging precordia; obliterated cardiac impulse; muffled heart sounds; triangular area of dullness; x-ray; paracentesis.

Neurosis ("Hysteria").—*Characteristics.*—A paroxysmal cough is sometimes

noted, often dry, persistent, croaking, monotonous, and unpleasant to hear (a loud barking cough, cynobex hebetica, may occur at puberty in boys of neurotic families). This may be a habit or tic due to defensive or suggested reaction.

Chief Signs.—See page 41.

Fibrinous Bronchitis (*Plastic Bronchitis*).—*Characteristics.*—Paroxysmal attacks of cough occur with dyspnea and the final expectoration of fibrinous casts of the bronchi.

Chief Signs.—May be acute or chronic; paroxysmal dyspnea and cough; occurrence in middle life; may be definite attacks over months or years; “bruit de drapeau.”

Pulmonary Actinomycosis.—*Characteristics.*—The cough is chronic, with mucopurulent, sometimes fetid, expectoration.

Chief Signs.—Irregular fever; presence of the *Actinomyces* in the sputum; physical signs suggestive of: first, chronic bronchitis; second, miliary tuberculosis, third, bronchopneumonia or abscess; presence of actinomycotic lesions elsewhere.

Less Common Causes.—Acute tracheitis; chronic tracheitis; spirochetal bronchitis; bronchiolitis fibrosa obliterans; fetid or putrid bronchitis; mycotic infections of the lungs and bronchi; psittacosis; atelectasis; atrophic emphysema; acute pulmonary congestion; acute pulmonary edema; syphilis of the lung; hernia of the lung; sarcoma of the lung; loculated empyema; empyema; foreign body in the ear; wound of the lung; elongated uvula; foreign body in the air passages; perforation of the lung in liver abscess; relapsing fever; typhoid fever (at the outset); subphrenic abscess; botulism; nasal or aural polypus; intestinal worms; coryza; septal spur; teething; hydrophobia; perichondritis of the larynx; multiple abscesses of the lung; pneumothorax; laryngeal polypus; nasal polyp; typhus; bronchial calculus; caries of the dorsal spine; gall-stones; enlarged lingual tonsil; epiglottic ulcer; diaphragmatic hernia; diphtheritic paralysis; hydatid cyst of the lung or liver; leukemia; chronic gastritis; chronic enteritis; paragonimiasis (distomatosis); myiasis; acute hepatitis; pharyngeal abscess; pregnancy; hepatoptosis; chronic granular pharyngitis; chronic laryngitis; syphilitic laryngitis; mediastinitis; pulmonary ascaridiasis; carcinoma of the esophagus; esophageal diverticulum.

HEMOPTYSIS

(*Bronchopulmonary Hemorrhage*)

It is important to differentiate hemoptysis from hematemesis. In hemoptysis, cough or signs of some pulmonary or cardiac disease precede in many cases the hemorrhage, while in hematemesis, the previous history points to gastric, hepatic, or splenic disease. In hemoptysis the blood is coughed up after a tickling sensation in the throat, but in hematemesis it is vomited up after an attack of giddiness. In the former the blood is frothy, bright red in color, alkaline, and mixed with mucus; in the latter it is clotted, mixed with particles of food, dark colored, and acid. After hemoptysis the cough persists with physical signs of lung involvement, and the sputum may be blood-tinged for many days; after hematemesis, the patient passes tarry stools and signs of disease of the abdominal viscera may be detected. Blood-stained discharges of nasal, lingual, gingival, or laryngeal origin must not

be confused with hemoptysis. The sputum is blood-streaked, blood-tinged, or mixed with blood in many laryngeal, bronchial, and pulmonary diseases. Only frank hemoptysis will be considered here; the character of the sputum is noted under "cough."

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics*.—Hemoptysis occurs in 60 to 80 per cent of cases, and is often an early symptom, though in the early stage it is usually small in amount (half-ounce), resulting from erosion of capillaries. In the later stages it comes from cavities and may be profuse. The bleeding, as a rule, sets in suddenly; the patient notices a warm, salty taste, and the mouth fills with blood; it may come up with a slight cough. The blood is frothy, mixed with mucus and generally bright red in color. When large amounts of blood are expectorated it may be dark in color. The sputum may remain blood-tinged for some days. The hemoptysis usually recurs several times. It is rarely fatal. Even without frank hemoptysis the sputum may be constantly streaked with blood, or pinkish or salmon-colored for long periods.

Chief Signs.—See page 357.

Bronchiectasis (*Dilatation of the Bronchi*).—*Characteristics*.—Small hemoptyses are not infrequent, and occasionally death may be produced by a large pulmonary hemorrhage.

Chief Signs.—See page 359.

Aneurysm of the Arch of the Aorta.—*Characteristics*.—Hemoptysis may occur and be fatal, and is a common cause of death from aneurysm. Death from hemorrhage is relatively more common in aneurysm of the third portion of the arch and of the descending aorta. The bleeding may be profuse, or it may be mild and continuous for weeks or months. The patient sometimes recovers.

Chief Signs.—See page 367.

Mitral Stenosis.—*Characteristics*.—When compensation fails, bloody sputum and small hemoptyses very commonly occur as the result of pulmonary infarcts.

Chief Signs.—See page 433.

Mitral Regurgitation (*Rheumatic*).—*Characteristics*.—Hemoptysis, although not as frequent as in cases of mitral stenosis, often occurs with failing compensation.

Chief Signs.—See page 451.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics*.—A brisk hemoptysis may be the initial symptom.

Chief Signs.—See page 357.

Pulmonary Infarction (*Pulmonary Embolism; Pulmonary Apoplexy*).—*Characteristics*.—A frank hemoptysis may occur, but it is not a necessary symptom of this condition.

Chief Signs.—See page 360.

Carcinoma of the Lung.—*Characteristics*.—The occurrence of small hemoptyses is extremely common. Occasionally the expectorated blood is thick, dark in color, and closely resembles currant jelly.

Chief Signs.—See page 362.

Fibroid Phthisis.—*Characteristics*.—There may be repeated attacks of hemoptysis, in one of which the patient dies.

Chief Signs.—See page 361.

Abscess of the Lung.—*Characteristics*.—A definite hemoptysis is an exceed-

ingly common symptom. Occasionally a fatal result is brought about by the occurrence of a large hemorrhage.

Chief Signs.—See page 360.

Wound of the Chest.—*Characteristics.*—In some severe cases there is no hemoptysis or there may be only a spitting of blood; in some slight bruises, on the other hand, the amount of blood coughed up may be large.

Chief Signs.—History of injury; shock, the degree depending on the extent of the injury; pain; dyspnea; cough; hemorrhage from the wound; may be pneumothorax; may be subcutaneous emphysema.

Less Common Causes.—Recurring hemoptysis in youth; pertussis; acute aortitis; influenza; gangrene of the lung; syphilis of the lung; hydatid (ecchinococcus) of the lung; bubonic plague; “hysteria”; typhoid fever; epilepsy; acute miliary tuberculosis, pulmonary (few instances); subphrenic abscess; actinomycosis; scurvy; pneumokoniosis; chronic interstitial pneumonia; angioma of the larynx; aortic cusp rupture; arteriosclerosis; hemorrhagic laryngitis; enlarged bronchial glands; bronchospirochetosis; dermoid cyst of the lung; sarcoma of the lung; diaphragmatic abscess, bursting into the lung; emphysema; empyema, bursting into the lung; pulmonary endarteritis; impacted foreign body in the air passages; hepatic abscess, bursting into the lung; leukemia; bronchial calculus; mediastinal tumor; lymphadenoma; congenital heart disease; malignant fevers; pernicious anemia; pleurisy (old or interlobar, rupturing into the lung); lingual varix; vicarious hemorrhage; recurrent hemoptysis of arthritis; chronic bronchitis; parasitic hemoptysis (paragonimiasis; aspergillosis); aortic regurgitation; ulceration of the larynx (cancer, lupus, syphilis); plastic or fibrinous bronchitis; carcinoma of the liver; purpura; fat embolism; Weil’s disease.

PAIN IN THE STERNAL REGION

(See also “Heartburn,” page 460; and “Dysphagia with Pain,” page 253.)

Syphilitic Aortitis.—*Characteristics.*—There may be sudden, acute, oppressive, paroxysmal substernal pain, or there may be diffuse thoracic pain with substernal tenderness; it may be anginoid with radiation as in angina pectoris.

Chief Signs.—History or evidence of syphilis; physical signs of dilatation of the aorta; systolic aortic murmur; x-ray; positive Wassermann.

Angina Pectoris.—*Characteristics.*—In the mildest form there is a feeling of substernal tension, rising at times to positive pain, usually associated with emotion, sometimes with exertion, but soon passing off. It is located to the right or left of the sternum, about the level of the third rib, or under the manubrium or xyphoid. The pain in severe forms is described as sharp, stabbing, tearing, or as dull and grinding. It usually radiates to the shoulder or the back, under the left scapula, often down the arm on the inner side to the wrist, fourth and middle fingers. It may radiate to the right or to both sides or even more extensively.

Chief Signs.—See page 367.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—Pain is the most common symptom, is rarely absent, but varies according to the various causes. It may be slight, continuous, severe, paroxysmal. It may be substernal, especially

if there is erosion of the bone, when there are irregular neuralgic pains. Even in the anginal type, instead of pain there may be a sense of substernal oppression, especially after exertion.

Chief Signs.—See page 367.

Acute Bronchitis (and Tracheitis).—*Characteristics.*—There is substernal soreness and pain on coughing. It may be intense beneath the sternum and along the attachments of the diaphragm.

Chief Signs.—See page 357.

Influenza (La Grippe).—*Characteristics.*—The substernal soreness of acute bronchitis may be present.

Chief Signs.—See page 357.

Coronary Thrombosis.—*Characteristics.*—A sudden attack of substernal (or precordial) pain or oppression occurs, radiating at times across the chest and into both arms. It is persistent, lasting one to eight hours.

Chief Signs.—Collapse; dyspnea; cardiac enlargement; low blood-pressure; fever; leukocytosis (11,000 to 35,000); may be pericardial friction rub; electrocardiography (inverted T wave).

Fracture of the Sternum.—*Characteristics.*—There is fixed and localized pain, increased by deep respiratory action, by body movements, or by cough. The head and body are bent forward, as attempts to straighten up cause much suffering. The fracture is most common at the junction of the gladiolus and manubrium.

Chief Signs.—History of severe direct violence; deformity; crepitus (auscultation and palpation during quick respiration); may be abnormal mobility; x-ray.

Acute Aortitis.—*Characteristics.*—Pain is an important diagnostic symptom. It is substernal, often at the junction of the first and second thirds of the bone, and may come in any degree, from a transient sense of tightness or oppression to utter torture. There is a tendency to radiate from the midsternal region into the left arm, occasionally into both arms, but rarely into the right alone.

Chief Signs.—Occurrence during an acute infectious disease; paroxysmal dyspnea; fever; pulsation in the episternal notch, above the clavicles, and in the second right interspace; increased aortic dullness; tympanitic second aortic sound.

Mediastinal Tumor.—*Characteristics.*—There may be a dull, boring substernal pain due to pressure and erosion. The pain varies, however, according to the various causes of its production (erosion, pressure on viscera, pressure on nerves). It may resemble that of aneurysm.

Chief Signs.—See page 362.

Mediastinal Abscess.—*Characteristics.*—Pain behind the sternum is the most common symptom; it may be of a throbbing nature.

Chief Signs.—Fever in acute cases; dyspnea; presence of a pulsating tumor at the border of the sternum or sternal notch; aspiration; x-ray.

Less Common Causes.—Caries or necrosis of the sternum (following fracture); tuberculosis of the bronchial glands (adenopathy); pericarditis; spinal apoplexy; foreign body in the bronchus; bronchial calculus; tabes dorsalis (cardiac crisis); esophagismus; multiple myelomata; acute and chronic mediastinitis; hypertrophic emphysema (xyphoid region); carcinoma of the esophagus; stricture of the esophagus; peptic ulcer of the esophagus; esophagitis; esophageal diverticulum.

PRECORDIAL PAIN

(See also "Heartburn," page 460.)

Aortic Regurgitation.—*Characteristics.*—Long before decompensation, pain may be marked. It is dull and aching, and confined to the precordia or radiating to the neck and arms; attacks of true angina are more frequent than in any other valvular disease.

Chief Signs.—Forcible cardiac impulse; visible pulsation of the heart; marked enlargement of the heart; aortic diastolic murmur; Corrigan pulse; increased pulse-pressure; visible capillary pulse.

Chronic Myocarditis (*Cardiac Fibrosis*).—*Characteristics.*—There may be pain in the cardiac area or extending to the shoulders and down the arms with a sense of weight in the precordia or it may be only a "stitch" in the side.

Chief Signs.—History of chronic intoxication or infectious disease or previous attacks of decompensation; feeble, irregular pulse; dyspnea on exertion; various arrhythmias; arteriosclerosis; electrocardiography.

Angina Pectoris.—*Characteristics.*—The pain varies from substernal tension in the mildest form to excruciating pain in the severe type, involving the cardiac area and radiating to the neck and down the arm, usually the left. There is often a sense of constriction, as if the heart were compressed in a vise.

Chief Signs.—Occurrence usually in middle-aged males; paroxysmal nature; pallor and a sense of impending death; association with exertion or emotion; constrained breathing; cold sweats; duration a few seconds to two minutes; high blood-pressure.

Pseudo-Angina.—*Characteristics.*—The pain lasts longer than in the true form and is usually confined to the precordia; also it is more a sense of expansion than constriction.

Chief Signs.—Occurrence usually in women of any age; often periodical and nocturnal; great restlessness and emotional disturbance; relief after antineuralgic medication.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—Pain is the most common symptom but it is variable. It is usually obstinate, constantly recurring, and radiates from the anterior chest and precordia to the right shoulder, neck, inner side of the right arm (ascending arch); to the left shoulder, back of the head, left arm (transverse arch); or to the left interscapular region (descending arch). There may be typical anginal attacks (when the sinuses of Valsalva are affected). Erosion of the bone causes local pain.

Chief Signs.—May be history of syphilis; pain (mild to anginoid); brassy cough, often paroxysmal; hoarseness or aphonia; may be slight hemoptysis; dyspnea, often paroxysmal; may be dysphagia; palpable or visible pulsation (expansile); inequality of the pupils; inequality of the pulses; tracheal tugging; dilated veins; increased area of dulness; diastolic shock and sound over the sac; systolic thrill and murmur over the sac; x-ray (expansile tumor).

Acute Myocarditis.—*Characteristics.*—There may be a sensation of discomfort or actual pain in the region of the apex beat, but it is a varying factor; it may follow exertion, and the intensity depends on the mental makeup of the patient.

Chief Signs.—History of infectious disease; disproportionate acceleration of the pulse; diminished tolerance to exercise; feeble heart sounds and pulse; may be soft apical systolic murmur; may be slight increase in cardiac dullness.

Tobacco Heart.—*Characteristics.*—There is precordial pain of a sharp, shooting character.

Chief Signs.—Occurrence in a youthful smoker; abuse of tobacco; palpitation; tachycardia; cardiac irregularities.

Acute Endocarditis.—*Characteristics.*—As a rule there is no complaint of pain or cardiac distress, but there may be precordial pain or substernal oppression with the dyspnea. It may be only a dull discomfort or intense and stabbing.

Chief Signs.—Abrupt onset; irregular fever; rigors; marked leukocytosis; rapid pulse; variable systolic murmur; blood culture.

Effort Syndrome (Soldier's Heart; Neurocirculatory Asthenia).—*Characteristics.*—Precordial pain is very common, varying from discomfort to actual pain, accompanied by pain in the skin, and sometimes amounting to a stabbing pain which the patient claims accompanies each beat of the heart.

Chief Signs.—Breathlessness on exertion out of proportion to the exertion made; undue fatigue on exercise; palpitation; occurrence under undue psychic or physical strain; attacks of giddiness and fainting; chronic mild tachycardia with undue increase on exertion; general neurotic symptoms; basal metabolic rate not increased.

Coronary Thrombosis.—*Characteristics.*—A sudden precordial or substernal pain occurs, radiating across the chest and down the arms, often terrific, and as of some one pulling the chest apart. Unlike angina, it lasts from one to eight hours.

Chief Signs.—See page 366.

Neurosis ("Hysteria").—*Characteristics.*—Attacks of pseudo-angina may occur. (See above.)

Chief Signs.—See page 41.

Acute Pericarditis.—*Characteristics.*—Pain may be entirely absent, or there may be a dull aching pain in the region of the heart, or a sharp excruciating pain localized in the cardiac area or radiating like angina pectoris. If fluid accumulates, the pain may disappear, become worse, or if not previously present, may occur; it varies from a sense of tightness to severe pain, and may be increased by pressure on the sternum.

Chief Signs.—Previous infection or wasting disease; to-and-fro friction rub, irregular and variable; increased precordial dullness of a triangular shape with muffled tones as fluid accumulates; x-ray; paracentesis.

Embolism and Thrombosis of the Pulmonary Artery.—*Characteristics.*—There may be an acute anguishing pain in the precordia or lancinating pains in the chest.

Chief Signs.—Apnea or intense dyspnea; pallor with cyanosis; dilated pupils; early unconsciousness; dilatation of the right side of the heart and accentuated second pulmonic sound; usually death.

Less Common Causes.—Aërophagy; gaseous distention of the colon; tabes dorsalis (cardiac crisis); cardiac decompensation; pleurisy of the precordial pleura;

arsenic poisoning; beriberi; epilepsy; anemia; aneurysm of the heart; rupture of an aortic cusp; gout.

PAIN IN THE SIDE OF THE CHEST

(See also "Pain in the Right Hypochondrium," page 471; and "Pain in the Left Hypochondrium," page 473.)

Acute Pleurisy.—*Characteristics.*—Pain in the side is often distressing and is usually referred to the lower axillary or nipple region; it is lancinating, sharp and severe, and is aggravated by cough and deep inspiration.

Chief Signs.—Acute onset; fever; friction fremitus and rub; immobility of the affected side; later, signs of effusion (flatness, absent fremitus, obscure breath sounds); x-ray.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics.*—Pain in the side is an early symptom, is rarely absent, and is often very severe; it is worse on coughing and on deep inspiration. It is most marked when a lower lobe is involved, slight in apical pneumonia, and absent in central pneumonia. There is tenderness on deep pressure. Referred pain is not uncommonly felt in the abdomen or iliac fossa. The pain may be reflected and felt on the opposite side with superficial tenderness.

Chief Signs.—See page 357.

Fracture of the Ribs.—*Characteristics.*—There is a sharp circumscribed pain at the injured point aggravated by movements of respiration and by direct pressure.

Chief Signs.—History of injury; crepitus; unnatural mobility; may be deformity; may be cough and hemoptysis; x-ray.

Intercostal Neuralgia.—*Characteristics.*—There is sharp, darting, stinging, or burning, intermittent pain along the course of the intercostal nerve on either side, with points of tenderness along the course of the nerves.

Chief Signs.—Absence of external evidence of disease; frequency in women; may be neurotic symptoms; elimination of tumor, caries, aneurysm, etc.; three points of tenderness (near the spine, in the midaxilla, and near the sternum).

Pleurodynia (*Intercostal Myalgia*).—*Characteristics.*—There is very severe unilateral pain, aggravated by deep respiration, coughing, and yawning; it is diffuse in distribution, not following the course of the nerves. There is diffuse tenderness. The affection is more common on the left side, but may jump from one side to the other.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—Chest pain is common. Its character varies. It may be sharp and knifelike or only a feeling of soreness. The commonest situation is perhaps in the lower thoracic zone, though in some instances it is felt in the shoulder, beneath the scapula, or referred to the apex. The attacks may recur at long intervals. Intercostal neuralgia occasionally occurs.

Chief Signs.—See page 357.

Herpes Zoster (*Shingles; Zona*).—*Characteristics.*—The preherpetic pain is burning or stabbing and severe, abating with the eruption; the postherpetic pain is severe, neuralgic, referred to the region of the eruption, and is often intractable.

Chief Signs.—Characteristic vesicular eruption in groups along the course of the nerve, which break and form scabs; unilateral distribution.

Pulmonary Infarction (*Pulmonary Embolism; Pulmonary Apoplexy*).—**Characteristics.**—There may be a sudden sharp pain in the side, more often the right, and commonly situated along the costal margin between the axilla and the scapula.

Chief Signs.—See page 360.

Deep Axillary Abscess.—**Characteristics.**—There is localized, sharp, lancinating, or diffuse, dull pain.

Chief Signs.—History of upper-arm infection; redness, swelling, tenderness, edema, heat, throbbing, tension, fluctuation, brawniness; chill, fever, sweats; aspiration (pus).

Diaphragmatic Pleurisy.—**Characteristics.**—The pain is low in the chest in the zone of the diaphragm and may simulate that of acute abdominal disease. It is intensified by pressure at the point of insertion of the diaphragm at the tenth rib, and in the posterior triangle of the neck. The pain may be referred to the gall-bladder region or lower; it is, however, superficial and not deep-seated. It is twice as common on the right side as on the left.

Chief Signs.—Respiration thoracic and short; may be attacks of dyspnea or angina; large effusion rare; intensive subjective with trifling objective features; exclusion of abdominal disease.

Empyema (*Purulent Pleurisy*).—**Characteristics.**—There may or may not be pain in the side of the chest. If present, it is of a stabbing character, and sudden or insidious in onset.

Chief Signs.—Slight cough; sweats and irregular fever; pallor and weakness, especially in a child; diminished excursion of the chest; heart and liver displacement; physical signs, those of pleurisy with effusion; high leukocytosis; aspiration (pus).

Acute Pneumothorax.—**Characteristics.**—The patient is suddenly seized with an agonizing pain in the side, which is usually felt at the costal margin. It is stabbing or tearing in character.

Chief Signs.—Extreme dyspnea; collapse; small, rapid pulse; immobility and enlargement of the affected side; displacement of the apex beat away from the affected side; absent tactile fremitus, tympany, absent or distant breath sounds, metallic quality to vocal resonance; coin test; may be râles (metallic tinkling) and cough; later succussion splash and signs of shifting fluid; x-ray.

Tuberculosis of the Spine (*Pott's Disease; Spinal Caries*).—**Characteristics.**—Pain is rarely severe and may take the form of an intercostal neuralgia.

Chief Signs.—See page 540.

Carcinoma of the Pleura (*Primary or Secondary*).—**Characteristics.**—There is pain similar to that of acute pleurisy (see above).

Chief Signs.—Cough; pleural friction; dyspnea; progressive effusion; emaciation and weakness; may be symptoms due to a growth in the lung ("currant jelly" sputum) venous engorgement, pressure on the trachea, etc.; aspiration (bloody fluid); may be subcutaneous nodules along the ribs; may be involvement of the cervical and axillary lymph glands; x-ray.

Tumor of the Spinal Cord (*Thoracic Region*).—**Characteristics.**—The pain is

frequently that of a persistent intercostal neuralgia, or may be a girdle sensation around the chest.

Chief Signs.—Loss of pain and temperature sense on the opposite side below the lesion; a zone of hyperesthesia above the level of the lesion; slowly progressive weakness of the leg going on to paralysis, first on the side of the growth; later, bilateral palsy of a spastic type; x-ray.

Less Common Causes.—Arteriosclerosis; fecal impaction; “growing pains”; rhizomelic spondylosis; Woillez’s disease; costal actinomycosis; cholelithiasis; flatulence; aneurysm of the descending thoracic aorta; costal tuberculosis; costal neoplasm (myeloma; gumma of the ribs); costal periostitis; subdiaphragmatic abscess; “hysteria”; cancer of the vertebræ; fracture of the spine; erysipelas; multiple myelomata; adiposis dolorosa; neurofibromatosis.

LOCALIZED TENDERNESS OF THE CHEST

Fracture of the Sternum.—*Characteristics.*—There is severe pain on pressure, usually over the gladiomanubrial junction.

Chief Signs.—See page 366.

Contusion of the Chest-Wall.—*Characteristics.*—Naturally there is tenderness at the seat of injury.

Chief Signs.—History of a blow; ecchymosis; swelling.

Fracture of the Ribs.—*Characteristics.*—There is marked soreness on pressure over the seat of pain, and on pressure backward over the sternum.

Chief Signs.—See page 369.

Abscess of the Chest-Wall.—*Characteristics.*—There is marked tenderness on pressure over the abscess.

Chief Signs.—Fever; heat, redness, pain, swelling, fluctuation; aspiration (pus).

Intercostal Neuralgia.—*Characteristics.*—Superficial tenderness is often severe. There are three tender spots along the course of the nerve, *viz.*, near the spine, in the midaxilla, and near the sternum. These correspond to the points of exit of the three cutaneous branches.

Chief Signs.—See page 369.

Pleurodynia (Intercostal Myalgia).—*Characteristics.*—There is diffuse tenderness on pressure over the intercostal muscles.

Chief Signs.—See page 369.

Herpes Zoster.—*Characteristics.*—Tenderness along an intercostal nerve is commonly found, and may be present before, during, and after the appearance of the characteristic rash. There may be the three points of maximum tenderness described in intercostal neuralgia.

Chief Signs.—See page 369.

Lobar Pneumonia (Croupous Pneumonia).—*Characteristics.*—In some cases the chest-wall over the site of the consolidation is hyperesthetic, the patient often complaining bitterly when the region is percussed.

Chief Signs.—See page 357.

Chronic Pulmonary Tuberculosis (Phthisis).—*Characteristics.*—When the pain of phthisis is objective it is usually associated with cavity formation and is

noted in percussing over the site of the cavity. Pain can usually be elicited by pressure with the finger-tips over the site of a friction rub even when there is no subjective pain otherwise.

Chief Signs.—See page 357.

Acute Pleurisy.—*Characteristics.*—There is usually some tenderness over the affected area. In those cases in which a friction rub is accidentally discovered some tenderness on pressure can usually be elicited. With the development of an effusion the pain of dry pleurisy disappears, leaving only a sensation of soreness on pressure over the site of the inflamed area.

Chief Signs.—See page 369.

Empyema (*Pulsating Empyema*).—*Characteristics.*—Tenderness on pressure over the seat of the pus is commonly present. This is especially marked in the rarer variety, empyema necessitatis.

Chief Signs.—See page 370.

Loculated Empyema.—*Characteristics.*—Palpation by firm pressure with the finger-tips may reveal a sharply circumscribed area of tenderness.

Chief Signs.—History of recent lobar pneumonia; pain in the side; cough and expectoration; septic fever; chills, sweats, leukocytosis; variable localized physical signs; aspiration (pus); x-ray.

Diaphragmatic Pleurisy.—*Characteristics.*—The pain may be intensified by pressure at the point of insertion of the diaphragm at the tenth rib. There may be also tender points in the side of the neck and in the shoulder of the same side.

Chief Signs.—See page 370.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—Sometimes superficial tenderness may be felt in the skin over the heart or over the left sternomastoid muscle.

Chief Signs.—See page 367.

Effort Syndrome (*Soldier's Heart; Neurocirculatory Asthenia*).—*Characteristics.*—Cutaneous hyperesthesia over the precordia is frequently present.

Chief Signs.—See page 368.

Angina Pectoris.—*Characteristics.*—Hyperesthesia is common in the area of the pain.

Chief Signs.—See page 367.

Acute Fibrinous Pericarditis.—*Characteristics.*—In some cases tenderness may be elicited by pressure with the finger-tips in the region of the apex.

Chief Signs.—See page 368.

Mediastinal Tumor.—*Characteristics.*—In some cases, especially when the pleura is invaded, the pain is objective entirely and can be elicited only by pressure with the palpating finger. Pressure over the sternum may be painful.

Chief Signs.—See page 362.

Neurosis (*"Hysteria"*).—*Characteristics.*—Hyperesthetic areas, the "hystero-genic" points, exist on the skin of the thorax (and abdomen), pressure upon which may cause minor manifestations, or even a convulsive attack.

Chief Signs.—See page 41.

Less Common Causes.—Acute bronchitis; chronic bronchitis (with emphysema); costal or sternal tuberculosis; interlobar pleurisy; costal or sternal periostitis; myocarditis; biliary colic; hepatic abscess; leukemia; multiple myelomata;

mediastinal abscess; chronic mediastinitis; intercostal neuritis; sarcoma of the ribs or sternum; carcinoma of the ribs or sternum; hydatid cyst of the ribs or sternum; gastric ulcer; flatulent dyspepsia.

DEFORMITIES OF THE CHEST

(See also "Asymmetry of the Chest," "Bulging of the Precordia," "Localized Swellings of the Chest-Wall," and "Bulging of the Intercostal Spaces," pages 376, 377, 377, 379.)

In inspection of the chest for asymmetry it must be remembered that variations are present in the normal, either from developmental, occupational, or postural causes. Developmental defects, antenatal and postnatal, may produce the "gutter-chest." There is a narrow, shallow, vertical gutter or groove corresponding to the median line of the sternum, due to an exaggerated forward convexity of the costal cartilages. Operative rib resection is commonly followed by retraction of the chest-wall at that point. Removal of the breast and pectoral muscles is another obvious cause of chest deformity. Traumatic lesions, such as gunshot wounds, may produce considerable deformity.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics*.—The chest may be long and narrow with very wide intercostal spaces, the ribs more vertical in direction and the costal angle very narrow. The scapulæ are "winged." In others the chest may be flattened in the anteroposterior diameter. The costal cartilages may be prominent and the sternum depressed. Sometimes the lower sternum forms a deep cavity ("funnel-breast"). One clavicle may stand out more distinctly than the other with atrophy of the muscles of the shoulder girdle on the affected side and depression above and below the clavicle. Scoliosis may be noted in the lower dorsal region. The opposite lung may be emphysematous and that side of the chest more prominent. These changes are usually seen in long-standing cases and it must be remembered that any type of chest may harbor tuberculous lungs.

Chief Signs.—See page 357.

Adenoids.—*Characteristics*.—Deformity of the chest occurs in long-standing cases. Three types may be recognized: (1) The "pigeon or chicken" breast, in which the sternum is prominent and there is a circular depression in the lateral zone (Harrison's groove) corresponding to the attachment of the diaphragm; the ribs are prominent anteriorly and the sternum angulated forward at the angle of Louis; (2) the "barrel" chest, due to asthmatic attacks, in which the chest is rounded, the neck short, and the shoulders and back bowed; (3) the "funnel breast" (trichterbrust), in which there is a deep depression at the lower sternum.

Chief Signs.—Nasal catarrh; mouth-breathing; disturbed sleep; deafness; may be headache; backward development; examination of the nasopharynx (finger or nasopharyngoscope).

Tonsil Hypertrophy.—*Characteristics*.—The chest may be deformed as in adenoids when the case is long-standing from infancy.

Chief Signs.—Practically those of adenoids (see above); presence of enlarged tonsils.

Rickets (*Rachitis*).—*Characteristics*.—The rachitic rosary is one of the first of the skeletal changes to appear. There are knobs at the costocartilage junctions. Lateral to this line of beads there is an oblique, shallow depression, extending downward and outward. Harrison's groove may be present as in adenoids, deepening with each inspiration. The sternum also projects, forming the "pigeon or chicken" breast.

Chief Signs.—Insidious development beginning about the period of dentition; nocturnal restlessness; head sweating; constipation; enlarged abdomen; painful joints; epiphyseal enlargements; square head; spinal deformity; late walking; catarrhal conditions; tendency to tetanic convulsions; phosphaturia.

Hypertrophic Emphysema.—*Characteristics*.—The thorax is markedly altered in shape; the anteroposterior diameter is increased, the chest being barrel-shaped. The lower zone of the chest looks large and the intercostal spaces are much widened. The sternal fossa is deep, the clavicles stand out prominently, and the neck looks shortened. The curve of the spine is increased and the back remarkably rounded. The chest does not expand but is elevated on inspiration.

Chief Signs.—Dyspnea; harsh, wheezy respirations, with prolonged expiration; cyanosis; chronic bronchitis; diminished vocal fremitus; general pulmonary hyperresonance; feeble heart sounds; coarse râles and sibilant rhonchi.

Fibroid Phthisis.—*Characteristics*.—The thoracic wall is flat and depressed either as a whole or locally; the shoulder droops; the clavicular areas are unduly deep; the interspaces are narrowed or even effaced by the crowding together and overlapping of the ribs; and the diaphragm is elevated above its normal level. In the extreme grade the spinal column inclines toward the shrunken side.

Chief Signs.—See page 361.

Chronic Interstitial Pneumonia (*Cirrhosis of the Lung*).—*Characteristics*.—The affected side is shrunken and motionless and the shoulder on this side lower than its fellow. The intercostal spaces are obliterated, and in some instances the ribs overlap. The spine is curved laterally, the convexity being always away from the affected side. The angle of the scapula may be tipped back from the chest-wall. The diaphragm is flatter than normal on the affected side.

Chief Signs.—See page 361.

Bronchiectasis (*Dilatation of the Bronchi*).—*Characteristics*.—In unilateral cases the affected side is markedly retracted. In bilateral cases there may be no discrepancy between the two sides; the chest may be normal in appearance or of the emphysematous type.

Chief Signs.—See page 359.

Chronic Adhesive Pleurisy.—*Characteristics*.—There may be flattening and retraction of the side of the chest.

Chief Signs.—History of pleurisy with effusion; occasional dragging pain at the base of the lung; moderate dyspnea; impaired mobility of the affected side; may be displacement of the heart; may be diminished tactile fremitus, impaired resonance, enfeebled breath sounds, leathery creaking friction sound.

Healed Empyema.—*Characteristics*.—After recovery from empyema flattening and retraction of the side of the chest may be marked.

Chief Signs.—History of empyema; may be scar of a fistulous drain; other symptoms as in chronic dry pleurisy (see above).

Scoliosis.—*Characteristics.*—The ribs of the right side (when the dorsal curve is convex to the right as in the usual variety) are separated, more horizontal, and bent at their angles; the shoulder is raised, the scapula more prominent, and the front of the chest flattened. On the left side the ribs are crowded together and their angles more obtuse, so that the shoulder is lower, the scapula less prominent, and the chest projects anteriorly.

Chief Signs.—For causes of Scoliosis, see page 551.

Infantile Scurvy (*Barlow's Disease*).—*Characteristics.*—The sternum with the adjacent costal cartilages and a small portion of the contiguous ribs seems to have sunk bodily back as though jammed against the spine.

Chief Signs.—Occurrence in children; history of dietary errors; painful swellings of the shafts and epiphyses of the bones; weakness; difficulty in moving the limbs; ecchymosis.

Fracture of the Sternum.—*Characteristics.*—The upper end of the lower fragment may project forward, causing deformity.

Chief Signs.—History of injury; pain; ecchymosis; motility of the sternal fragments; crepitus; dyspnea; cyanosis of the upper part of the body; cough; emphysema; hemothorax; x-ray.

Cobbler's Chest.—*Characteristics.*—The lower portion of the chest is sunken due to pressure of the last.

Mediastinal Tumor.—*Characteristics.*—In long-standing cases, the persistent intrathoracic pressure may cause the sternum to give way, resulting in a mound-like swelling.

Chief Signs.—See page 362.

Atrophic Emphysema (*Senile Atrophy of the Lungs*).—*Characteristics.*—The chest is small and contracted, abnormally shallow and peculiarly deformed by bowing of the shoulders, by depression of the sternum, clavicles, and ribs, by exaggerated costal obliquity, and by narrowing of the lower interspaces. The chest-wall is rigid, and the muscles generally wasted and flabby.

Chief Signs.—Senility; chronic winter cough; may be several daily expectorations of large quantities of sputum; dyspnea on exertion; limited expansion; inspiratory sucking in of the intercostal and supraclavicular spaces; no displacement of the heart; hyperresonance; diminished breath sounds; râles in winter.

Serratus Magnus Paralysis (*Long Thoracic Nerve Palsy*).—*Characteristics.*—The scapulæ protrude from the back like wings. The scapulæ cannot be fixed; when the arm is raised the scapula rotates so that the vertebral border projects. Pushing ability is impaired.

Chief Signs.—History of injury or neuritis.

Progressive Muscular Atrophy.—*Characteristics.*—The chest is box-shaped and flat, with perpendicular walls projecting beyond the concave flanks ("wasp waist").

Chief Signs.—See page 319.

Syringomyelia.—*Characteristics.*—Deformity of the chest occurs from scoliosis and is similar to that described under scoliosis. The sternum may be sunken due to kyphosis.

Chief Signs.—See page 317.

Less Common Causes.—Achondroplasia; liver hypertrophy; splenomegaly;

caries of the sternum; hernia of the lung; necrosis of the ribs; osteomyelitis of the ribs; pneumothorax; tubercle of the rib; pneumopericardium; hypertrophy of the male breast; tuberculosis of the bony thorax; gumma of the bony thorax; subphrenic abscess; encysted pleural effusion; pertussis; hemothorax; cancer of the pleura; diaphragmatic hernia; contraction of vomica; anosteoplasia (rudimentary clavicles); pulmonary collapse; atelectasis; enlarged thymus (bulging in the upper sternal region).

ASYMMETRY OF THE CHEST

(See also, "Deformities of the Chest," page 373; and "Bulging of the Precordia," page 377.)

This caption differs from the previous one ("Deformities of the Chest") in that there is merely a difference in the size of the two sides of the chest, determined by inspection or mensuration. The left side of the chest is normally smaller than the right.

Compensatory Emphysema.—*Characteristics.*—The sound side is seen to be much larger than the diseased side, which may be retracted and immobile.

Chief Signs.—Presence of unilateral lung disease; increased expansion of the sound side; hyperresonance of the sound side; harsh breath sounds on the sound side; displacement of the heart toward the diseased side.

Pleurisy with Effusion.—*Characteristics.*—In large effusions there is an increase in volume of the affected side, which may appear to be much more than it really is as determined by mensuration.

Chief Signs.—See page 416.

Empyema (Purulent Pleurisy).—*Characteristics.*—Bulging of the affected side is greater than in pleurisy with effusion. In children it may be very distinct.

Chief Signs.—See page 416.

Hydrothorax.—*Characteristics.*—There is increase in volume of the affected side as in pleurisy with effusion; hydrothorax, however, is often bilateral.

Chief Signs.—See page 423.

Lobar Pneumonia (Croupous Pneumonia).—*Characteristics.*—The affected side may be larger. Mensuration may show a definite increase in the volume of that side, rarely more, however, than 1 or 1½ cm.

Chief Signs.—See page 357.

Acute Pneumothorax.—*Characteristics.*—There is marked enlargement of the affected side with immobility.

Chief Signs.—See page 370.

Hemiplegia.—*Characteristics.*—The paralyzed side of the chest is more prominent than the non-paralyzed side during ordinary respiration, but on deep respiration the non-paralyzed side expands more than the paralyzed side.

For causes of Hemiplegia, see page 314.

Carcinoma of the Lungs (and Pleura).—*Characteristics.*—Unilateral large growths may cause a bulging of the side with widening of the intercostal spaces. Sometimes there is local chest deformity. A new growth attended by dense fibrosis and adhesions or by pressure atelectasis may be accompanied by retraction of the side.

Chief Signs.—See page 362.

Less Common Causes.—Splenomegaly (bulging of the lower left thorax); hepatomegaly (bulging of the lower right thorax); hemothorax; atelectasis, due to occlusion of the main bronchus (affected side smaller); collapse of the lung; sarcoma of the lung.

BULGING OF THE PRECORDIA

Cardiac Hypertrophy (*In Children*).—*Characteristics.*—The precordia may be prominent.

Chief Signs.—See page 434, also for causes of Cardiac Hypertrophy, see page 437.

Pericarditis with Effusion.—*Characteristics.*—In children a noticeable bulging in the precordial region is often to be observed, and the anterolateral diameter may be increased.

Chief Signs.—See page 362.

Chronic Adhesive Pericarditis (*Adherent Pericardium*).—*Characteristics.*—The precordia is prominent and there may be marked asymmetry owing to cardiac enlargement.

Chief Signs.—History of pericarditis; enlargement and dilatation of the heart; increased extent of the cardiac impulse of a wavy character with retraction of the chest-wall in systole; retraction of the tenth and eleventh ribs posteriorly in systole, and of the seventh and eighth anteriorly (in the axilla); may be absence of the respiratory movements in the epigastrium, and immobility of the sternum during inspiration; may be pulsus paradoxus; fixed apex beat; diastolic collapse of the cervical veins; murmurs of relative insufficiency.

Less Common Causes.—Aneurysm of the arch of the aorta; mediastinal tumor; pneumopericardium; pyopericardium; hemopericardium; acromegaly (inferior sternal region); scoliosis.

LOCALIZED SWELLINGS OF THE CHEST-WALL

(See also "Swellings of the Breast," page 383.)

Aneurysm of the Arch of the Aorta.—*Characteristics.*—According to the amount of erosion produced, a local bulging or even a definite tumor may appear. It is expansile, pulsating with each beat of the heart, and over the swelling the tissues tend to become brawny, edematous, and stained purple or black with suffused blood, while later the surface structures may break down and a mixture of serum and blood trickle from the sac. Aneurysm of the ascending aortic arch usually appears in the neighborhood of the second and third intercostal spaces and the sternum; those of the transverse arch may erode the chest-wall beneath or alongside the sternum; while those of the descending arch, if they reach the surface, appear alongside the spine in the left interscapular region.

Chief Signs.—May be history of syphilis; pain (mild to anginoid); brassy cough; hoarseness or aphonia; may be slight hemoptysis; dyspnea, often paroxysmal; may be dysphagia; palpable or visible pulsation (expansile); inequality of the pupils; inequality of the pulses; tracheal tugging; dilated veins; increased area

of dulness; diastolic shock and sound over the sac; systolic thrill and murmur over the sac; x-ray (expansile tumor).

Abscess of the Chest-Wall.—*Characteristics.*—There is a localized edematous, inflammatory swelling.

Chief Signs.—Fever; local heat, redness, tenderness, pain, fluctuation; aspiration (pus).

Sebaceous Cyst.—*Characteristics.*—This has the same characteristics as elsewhere. There is a globular swelling attached to the skin at one point, which may fluctuate, and which on evacuation gives up a cheesy material.

Gumma of the Sternum.—*Characteristics.*—There is a hard, painless, hemispherical swelling in the upper sternal region, apparently originating in the breast-bone. It may undergo degeneration with central fluctuation, or it may ulcerate, forming a deep circular, punched-out ulcer with undermined edges and an uneven floor, which is usually covered with a thick white adherent slough.

Chief Signs.—History or evidence of syphilis; positive Wassermann; therapeutic test.

Empyema Necessitatis.—*Characteristics.*—There is a localized, often pulsating tumor caused by the burrowing of pus through the thoracic parietes. It invariably appears on the anterior or lateral chest-wall, somewhere between the third and sixth interspaces. There may be discharge of pus through a fistula.

Chief Signs.—Those of empyema, see page 416.

Fracture of the Sternum.—*Characteristics.*—If there is displacement of the lower fragment forward and upward, there will be a local prominence, usually at the junction of the manubrium and gladiolus.

Chief Signs.—See page 375.

Subcutaneous Emphysema.—*Characteristics.*—There is a great and growing swelling which crackles.

Chief Signs.—History and signs of injury to the lung (as in fracture of the ribs).

Mediastinal Tumor.—*Characteristics.*—The growth may erode the chest-wall, appearing thereupon as a circumscribed node of variable size, outline, and consistency, but tending ultimately to soften, to discolor, and to break down.

Chief Signs.—See page 362.

Costal or Sternal Tuberculosis.—*Characteristics.*—There may be an abscess or a sinus, the pus having broken through the skin, and the periosteum is felt to be thickened. The abscess is usually painless (cold abscess).

Chief Signs.—Chronicity; presence of tuberculosis elsewhere; probing of the sinus (leading obliquely to eroded bone); Von Pirquet test.

Multiple Myelomata.—*Characteristics.*—In many cases a sternal tumor can be palpated.

Chief Signs.—Occurrence in middle age; aching in the limbs and weakness; pain and tenderness in the back, chest, and ribs; spontaneous fractures; Bence-Jones proteinuria; x-ray.

Less Common Causes.—Callus from fracture; perichondritis; sarcoma; lipoma; carcinoma; carcinoma of the pleura; mediastinal abscess; subpectoral abscess; encysted pleurisy; hernia of the lung; localized pneumothorax; osteomyelitis of

the ribs; gumma of the ribs; enlarged thymus; hydatids of the lung; hepatic abscess; hypernephroma.

SORES ON THE CHEST-WALL

(See also "Skin Affections of the Chest," page 385.)

Carcinoma of the Breast.—*Characteristics.*—Ulceration may occur and is preceded by a reddish or purplish discoloration of the skin. A scirrhus ulcer is deep and has an offensive sanguinous discharge, a sloughing base, and hard, irregular, everted margins. The surrounding skin becomes red and filled with cancerous nodules. Medullary or soft cancer ulcerates quickly. In recurrent carcinoma there are nodular ulcers at the site of a previous amputation for cancer.

Chief Signs.—See page 384.

Burns.—*Characteristics.*—In severe third-degree burns of the trunk the hard, black, anesthetic, charred tissue is finally separated from the living tissues by ulceration.

Cellulitis (*Phlegmonous Erysipelas*).—*Characteristics.*—There may be sloughing of the cutaneous tissues or even gangrene. Ulcers are left after casting off of the sloughs.

Chief Signs.—Rapid onset; irregular chills, fever, sweats; prostration; may be delirium; red, brawny, edematous, spreading swelling; enlarged glands; purulent infiltration; may be pyemia with its complications.

Costal or Sternal Tuberculosis.—*Characteristics.*—There may be one or more sinuses draining pus. A probe passed through an opening leads obliquely to eroded bone.

Chief Signs.—See page 378.

Gumma of the Sternum.—*Characteristics.*—A gumma may break down, forming a deep, circular, punched-out ulcer with undermined edges and an uneven floor, which is usually covered with a thick, white, adherent slough.

Chief Signs.—See page 378.

Empyema Necessitatis.—*Characteristics.*—Fistulation through an intercostal space, with discharge of the pus through the chest-wall, is a common method of spontaneous evacuation. The tract may drain for some time.

Chief Signs.—See page 378.

Less Common Causes.—Sarcoma of the sternum; actinomycosis (cutaneous); sporotrichosis; blastomycosis; mycosis fungoides; epithelioma; sarcoma cutis; tuberculosis of the mammary gland.

BULGING OR OBLITERATION OF THE INTERCOSTAL SPACES

Pleurisy with Effusion.—*Characteristics.*—The intercostal spaces are filled out or may even present a bulging appearance. The affected side may appear larger. In some patients the intercostal spaces are wider than normal, but in children they may be distinctly narrowed, by reflex contraction of the intercostal muscles. The lower intercostal spaces are unduly shallow or even effaced so that the contour of the lower chest is smooth and rounded.

Chief Signs.—See page 416.

Empyema (*Purulent Pleurisy*).—*Characteristics*.—The intercostal spaces may bulge, especially in children, in whom there may be distinct bulging also of the whole of the affected side.

Chief Signs.—See page 416.

Hydrothorax.—*Characteristics*.—This condition resembles pleurisy with effusion as regards physical signs, except that it is often bilateral.

Chief Signs.—See page 423.

Acute Pneumothorax.—*Characteristics*.—The affected side is distended and immobile, the intercostal spaces being effaced and the diaphragm shadow abolished.

Chief Signs.—See page 370.

Pericarditis with Effusion.—*Characteristics*.—The intercostal spaces in the precordia may bulge somewhat.

Chief Signs.—See page 362.

Less Common Causes.—Mediastinal tumor; mediastinal abscess; pyopneumothorax; hydatids of the lung; hemothorax; subphrenic abscess (usually on the right side, lower thoracic region).

RETRACTION OF THE INTERCOSTAL SPACES

Dyspnea.—*Characteristics*.—There is retraction of the intercostal spaces during inspiration or expiration according to the type of embarrassment, due to excessive overaction of the accessory muscles of respiration. If the dyspnea is mixed it will occur during both phases of respiration. The lower ribs may also share in the retraction.

For causes of Dyspnea, see page 391.

Cardiac Hypertrophy.—*Characteristics*.—There may be a systolic retraction of the interspaces in the region of the apex, especially in emaciated subjects. It is due to the tug of the hypertrophied and greatly overacting heart.

Chief Signs.—See page 434.

Aortic Regurgitation.—*Characteristics*.—Sometimes a systolic retraction of the interspaces over the precordia, due to atmospheric pressure, is demonstrable.

Chief Signs.—See page 367.

Chronic Adhesive Pericarditis (*Adherent Pericardium*).—*Characteristics*.—A pathognomonic sign is the systolic retraction of the tenth and eleventh intercostal spaces in the left infrascapular region, and also, less commonly, of the seventh and eighth interspaces in the axilla (Broadbent's sign). There is also a systolic retraction in the neighborhood of the apex beat.

Chief Signs.—See page 377.

Mitral Stenosis.—*Characteristics*.—A late diastolic retraction of the interspaces over the precordia is visible in some cases.

Chief Signs.—See page 433.

Atrophic Emphysema (*Senile Atrophy of the Lungs*).—*Characteristics*.—Inspiratory sucking in of the intercostal and supraclavicular spaces may occur.

Chief Signs.—See page 375.

Less Common Causes.—Chronic adhesive pleurisy; fibroid phthisis (precordial retraction); chronic interstitial pneumonia (precordial retraction); tetany (sys-

toxic retraction of the left lower ribs behind) ; carcinoma of the lungs (with fibrosis and adhesions or pressure atelectasis) ; collapse of the lung (in children).

EDEMA OF THE CHEST-WALL

Anasarca (*Of Cardioresenal Origin*).—*Characteristics*.—In chronic parenchymatous nephritis edema of the chest-wall is a part of the general dropsy which is a marked and obstinate symptom. In the chronic interstitial type edema does not appear until heart-failure begins.

For causes of Anasarca, see page 659.

Empyema (*Purulent Pleurisy*).—*Characteristics*.—Edema is not infrequently present. In edema necessitatis the edematous area is localized and pulsates. It is demonstrated by pressure of the finger-tips when it would not otherwise be suspected.

Chief Signs.—See page 416.

Aneurysm of the Arch of the Aorta.—*Characteristics*.—Edema of the upper chest and arm may occur in aneurysm of the ascending or transverse arch from pressure on the superior vena cava. When erosion occurs the tissues over the swelling tend to become brawny, edematous, and stained purple or black with suffused blood.

Chief Signs.—See page 367.

Mediastinal Tumor.—*Characteristics*.—The upper part of the thorax and arms may be swollen and edematous from obstruction of the superior vena cava.

Chief Signs.—See page 362.

Abscess of the Chest-Wall.—*Characteristics*.—There is localized painful inflammatory edema and swelling.

Chief Signs.—See page 378.

Loculated Empyema.—*Characteristics*.—There may be a localized area of edema over the pus.

Chief Signs.—See page 372.

Less Common Causes.—Purulent pericarditis ; mediastinal abscess ; hydatid of the lung ; angioneurotic edema ; occlusion of the precava ; fetal erythroblastosis.

ENLARGED VEINS OF THE CHEST-WALL

Mediastinal Tumor.—*Characteristics*.—If of long duration there are signs of collateral circulation and the superficial mammary and even the epigastric veins are enlarged ; flow in the vessels is downwards. If there is sufficient pressure upon the superior vena cava there is distention and tortuosity of the superficial veins of the face, neck, arms, and upper anterior chest-wall ; compression of an innominate vein or one of its tributaries will cause unilateral phenomena of this sort.

Chief Signs.—See page 362.

Aneurysm of the Arch of the Aorta.—*Characteristics*.—One side of the chest may show dilated and tortuous veins with the current flowing from above downward. This is due to obliteration of the subclavian or jugular vein, usually the left, from pressure. Obliteration of the superior vena cava is very rare.

Chief Signs.—See page 367.

Cirrhosis of the Liver (*Alcoholic*).—*Characteristics*.—With portal obstruction,

the mammary and also the epigastric veins may be enlarged. Distended venules in the lower thoracic zone along the attachment of the diaphragm may be present but not especially marked.

Chief Signs.—See page 515.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics.*—There may be a fringe of dilated veins along the costal arch due to dilatation of the right ventricle.

Chief Signs.—See page 358.

Intrathoracic Goiter.—*Characteristics.*—The veins of the neck and upper chest may be dilated.

Chief Signs.—Feeling of suffocation on exertion or when lying down or asleep; husky or metallic quality of the voice; dyspnea on exertion; cyanosis of the face; may or may not be visible and palpable tumor in the lower neck disappearing beneath the sternum; dulness over the upper sternum; x-ray.

Pregnancy.—*Characteristics.*—As the breasts enlarge (usually after the second month) a delicate tracery of bluish veins appears just beneath the skin of the mammae. This condition persists throughout lactation.

Chief Signs.—See page 502.

Empyema (*Purulent Pleurisy*).—*Characteristics.*—The network of subcutaneous veins may be very distinct on the side of the disease.

Chief Signs.—See page 416.

Carcinoma of the Lungs.—*Characteristics.*—The superficial veins of the thoracic wall and neck may be distended abnormally in consequence of pressure upon the superior vena cava and internal mammary vein.

Chief Signs.—See page 362.

Tuberculous Adenitis (*Tracheobronchial*).—*Characteristics.*—The veins of the neck and upper part of the chest may be enlarged.

Chief Signs.—See page 361.

Less Common Causes.—Hodgkin's disease; chronic fibrous mediastinitis; portal obstruction or thrombosis; thrombosis of the superior vena cava; thrombosis of the innominate veins; carcinoma of the breast; sarcoma of the breast.

PAIN IN THE BREAST

Pregnancy, either intra-uterine or ectopic, is a common cause of pain and soreness of the breasts, accompanied by some swelling; these phenomena occur early. During menstruation there may be some pain and soreness of the breasts. Trauma is an obvious cause of pain.

Mastodynia (*Neuralgia of the Breast*).—*Characteristics.*—The pain is associated with hyperesthesia of the skin and deep tenderness of the gland, but no organic changes can be detected. It is most common in young, unmarried women.

Acute Mastitis.—*Characteristics.*—There is at first a feeling of weight in the affected breast. This is followed by pain, which may become very acute.

Chief Signs.—Occurrence usually during lactation; shivering and fever; heat, redness, and swelling of the gland.

Abscess of the Breast.—*Characteristics.*—The local symptoms of acute mastitis are greatly aggravated.

Chief Signs.—History of preceding acute mastitis; swelling, edema, heat, red-

ness, fluctuation; enlargement of the cervical and axillary glands; may be discharge of pus from the nipple; incision (pus).

Chronic Mastitis (*Lobar, Lobular, and Chronic Suppurative*).—*Characteristics*.—The patient has slight pain in the gland at times. In the lobar or circumscribed variety the breast is sometimes the seat of severe neuralgia, which is apt to be worse during menstruation.

Chief Signs.—See page 384.

Involution Cysts of the Breast (*Cystic Degeneration of the Mammæ*).—*Characteristics*.—The whole organ is very often painful. Occasionally there are attacks of lancinating pain in the breast with radiation to the chest and arm. The affection is often bilateral.

Chief Signs.—Occurrence usually near the menopause; shotty, nodular feel; “neurasthenia” or “hysteria”; may be discharge from the nipple.

Carcinoma of the Breast.—*Characteristics*.—Pain is absent at first, but in the final stages becomes agonizing owing to the involvement of the axillary nerves. It is lancinating and neuralgic in character, and is not brought on or increased by handling.

Chief Signs.—See page 384.

Cracked Nipple (*Mammilitis*).—*Characteristics*.—Nursing is painful.

Chief Signs.—See page 385.

Mammary Engorgement (*Caked Breast*).—*Characteristics*.—Pain occurs simultaneous to the development of the milk flow, about the third or fourth day after labor.

Chief Signs.—Swollen, turgid, nodular condition of the breasts.

Oöphoritis (*Acute or Chronic*).—*Characteristics*.—The pain of the ovarian disease may radiate or be referred to the breast, and thigh.

Chief Signs.—See page 574.

Neurosis (“*Hysteria*”).—*Characteristics*.—Pain may be complained of in the breast, more commonly the left, accompanied by hyperesthesia. This is really a form of mastodynia.

Chief Signs.—See page 41.

Less Common Causes.—Sarcoma of the breast; tuberculosis of the breast; uterine fibroids; fibroma of the breast.

SWELLINGS OF THE BREAST

Swelling of the breast in pregnancy and lactation is normal and physiological. Both breasts are enlarged equally, and feel tender and nodular.

Acute Mastitis.—*Characteristics*.—The gland is swollen, tender, and painful. The skin of the breast is reddened. Abscess may develop.

Chief Signs.—See page 382.

Abscess of the Breast.—*Characteristics*.—The enlargement is accompanied by inflammatory symptoms, such as edema, pain, swelling, fluctuation.

Chief Signs.—See page 382.

Cysts of the Breast (*Involution Cysts; Lacteal Cyst*).—*Characteristics*.—Numerous small cysts occur in involution cyst, usually in both breasts, and usually toward the menopause; there may be attacks of pain and discharge from the

nipple. A lacteal cyst or galactocele is a rounded, fluctuating, painless tumor which occurs soon after delivery and increases in size during nursing.

Chronic Mastitis (*Lobar, Lobular, and Chronic Suppurative*).—*Characteristics*.—In the lobar variety, one or more lobes are enlarged, indurated, tender, and sometimes the seat of severe neuralgia. In lobular mastitis the nodules are smaller and more diffuse, with a marked increase in connective tissue and the formation of multiple cysts; the gland becomes hard, nodular, and shrunken, and both breasts are involved. In chronic suppurative mastitis, the abscess wall is often so thick as to resemble a tumor, and pus is present but often without symptoms of inflammation.

Chief Signs.—History of childbirth or numerous slight traumatisms; vague pains and tenderness; incision and biopsy (frozen section).

Benign Tumor of the Breast (*Fibro-Adenoma; Cystadenoma*).—*Characteristics*.—A fibro-adenoma is hard, slightly nodular, freely movable, generally painless, and not associated with impairment of the general health, axillary involvement, or retraction of the nipple. It occurs between puberty and the age of thirty. A cystadenoma is hard, nodular, encapsulated, movable, generally painless, and may attain a large size, and be attended with a bloody discharge from the nipple; there is no infiltration or glandular involvement. It occurs between thirty and forty years.

Chief Signs.—Biopsy (frozen section).

Malignant Tumor of the Breast (*Sarcoma; Carcinoma*).—*Characteristics*.—A sarcoma is hard or soft; it is encapsulated, grows rapidly, is very painful, and there is a discharge from the nipple; the axillary glands are not involved until ulceration has occurred, but early metastases are common. It occurs between twenty-five and thirty years. In the most common form of carcinoma, the scirrhus variety, the tumor is hard, nodular, and immobile from the beginning, the axillary glands soon become involved, and retraction of the nipple or dimpling of the skin may occur. It is most frequent in the upper and outer segment; the nipple is higher on the affected side. Growth is slow, with gradual infiltration. Pain is absent at first. Cachexia is a late symptom. Finally ulceration and discharge develop. In duct cancer, the tumor is softer and not nodular, is without pain, nipple retraction, or dimpling, but a serous or bloody fluid may be often squeezed from the nipple. Scirrhus cancer occurs usually after thirty-five. The medullary, encephaloid, or soft cancer grows rapidly, quickly ulcerates, causes early metastases, and appears earlier in life; as a rule, the skin is distended rather than dimpled, and the nipple is not retracted. A simple cancer approaches the normal in the relative amount of fibrous and epithelial tissues, and is midway between the encephaloid and the scirrhus in hardness and malignancy.

Chief Signs.—Biopsy (frozen section).

Diffuse Hypertrophy of the Breast.—*Characteristics*.—There is swelling of one or both breasts to a considerable proportion, beginning at puberty, without inflammatory signs. The breast is usually of normal consistency but is sometimes of diffuse firmness.

Less Common Causes.—Actinomycosis; gumma; tuberculosis of the breast; hydatid cyst; cancer en cuirasse; endothelioma; colloid or myxomatous carcinoma; retention cyst of infancy.

DISCHARGE FROM THE NIPPLE

A milky discharge comes normally from the breast in pregnancy and lactation, and occasionally under other but unimportant circumstances.

Mammilitis (*Cracked Nipple*).—*Characteristics*.—The discharge is slight in amount; the ulceration not unusually bleeds when the nipple is nursed by the child.

Chief Signs.—Occurrence in nursing women; localized inflammation; severe pain.

Abscess of the Breast.—*Characteristics*.—Pus may run from the nipple.

Chief Signs.—See page 382.

Chronic Mastitis.—*Characteristics*.—A watery discharge from the nipple may occur in chronic lobular mastitis.

Chief Signs.—See page 384.

Involution Cyst.—*Characteristics*.—Frequently there is a history of discharge from the nipple.

Chief Signs.—See page 383.

Carcinoma of the Breast.—*Characteristics*.—When a scirrhus cancer originates in or invades the nipple, the nipple becomes retracted, shrunk, and fixed, and occasionally exudes a thin, bloody discharge.

Chief Signs.—See page 384.

Papillary Cystadenoma (*Intracanalicular Papilloma*).—*Characteristics*.—There may be a bloody discharge from the nipple as the result of an intracystic hemorrhage.

Chief Signs.—Occurrence between thirty and forty years; presence of a hard, nodular, painless, movable growth in or near the nipple.

Epithelioma of the Nipple.—*Characteristics*.—A foul, red, sanious and fetid discharge comes when ulceration occurs, which is early.

Chief Signs.—Presence of a new growth beginning as an indurated area in the areola or as an excoriation of the nipple; early infiltration of the gland; early subclavicular and axillary gland involvement.

Sarcoma of the Breast.—*Characteristics*.—There is frequently a bloody discharge.

Chief Signs.—See page 384.

Paget's Disease (*Malignant Dermatitis*).—*Characteristics*.—There is a moist desquamation at the beginning which is followed by a copious, sticky, yellowish discharge with the formation of crusts, beneath which the surface is red and raw; the nipple may be retracted or destroyed; the condition occurs in women past middle life.

Less Common Causes.—Tuberculous mastitis; suppurating sebaceous cyst; Buhl's disease; chancre of the nipple.

SKIN AFFECTIONS OF THE CHEST

(See also "Skin Affections of the Axilla," page 301.)

The rashes of the exanthemata appear upon the trunk. The general distribution and character of the rash is distinctive. These eruptions are described under

the various skin lesions in the section on General Symptoms (which see).

Syphilis.—*Characteristics.*—The majority of the secondary skin lesions occur on the chest, but, as a rule, are not confined to it, occurring also upon the abdomen and limbs and to a lesser extent upon the face. The ordinary macular syphilis presents roseolus spots, large or small, pinkish to dark purplish-red, sometimes becoming annular. The maculopapular eruption resembles urticaria somewhat, the lesions being pale pinkish in color, oval in shape, well defined, and about one cm. in length. They also may become annular. The miliary papular eruption consists of small conical papules situated at the mouths of the hair follicles, sometimes forming circles. Lenticular papules may occur widely distributed over the entire body but tending to group formation. Another variety is the large, discoid, flat, disseminated syphilid. Suppuration may invade the papular eruption, forming pustules. The nodular lesions of late syphilis may also develop upon the trunk and may form circinate or serpiginous patches. Gummata may occur upon the chest and may break down into deep, punched-out ulcers, which may at times be covered by thick laminated crusts. The color of the syphilodermata is a dingy or dull red, often coppery. They are usually unaccompanied by subjective symptoms.

Chief Signs.—See pages 192, 193.

Acne Vulgaris.—*Characteristics.*—The shoulders and back are frequently affected, as is also the upper part of the chest. There is an aggregation of papules, pustules, and comedones, the papules and pustules being either superficial or deep-seated. The pustules rupture spontaneously, usually without scar formation, but when the lesions are deep there may be scarring.

Chief Signs.—Onset at puberty; involvement of the sebaceous glands; chronicity.

Herpes Zoster.—*Characteristics.*—Groups of vesicles suddenly appear along the course of the intercostal nerves, at first discrete, later confluent. They are filled with clear fluid and surrounded by a red areola. The vesicles dry up and become scabby by the end of ten days to two weeks. The condition is unilateral.

Chief Signs.—Marked burning or neuralgic pain along the course of the nerve preceding, accompanying, and following the attack; regional adenitis.

Pityriasis Rosea.—*Characteristics.*—A widespread eruption suddenly manifests itself, most profuse upon the trunk (face, hands, and feet always spared). The eruption is macular, maculopapular, or distinctly papular. The lesions are oval, scaly, bright rosy red, varying in size from a half to one inch in length, and have their long axes parallel to the ribs. In a few days the centers become yellow while the edges remain rosy. The lesions of the maculopapular and papular are smaller than those of the macular type.

Chief Signs.—Herald patch, usually on the flank; sore-throat and malaise; sudden spread of the eruption; duration several weeks to a few months.

Seborrheic Dermatitis (Eczema Seborrhoicum).—*Characteristics.*—The chest, when involved, is usually affected in the sternal and midscapular regions, where there are heavy, yellow, greasy scales mounted upon circumscribed erythematous bases. There may be some itching.

Psoriasis.—*Characteristics.*—Slightly elevated plaques are present, covered thickly with imbricated, bristling, whitish scales, which, when removed, leave

minute bleeding points. The lesions are sharply defined, from one inch to many inches in diameter.

Chief Signs.—Chronicity; absence of itching; presence of lesions on the extensor surfaces and scalp; improvement in summer.

Tinea Versicolor (*Pityriasis Versicolor*).—*Characteristics.*—The chest and back are chiefly affected. The disease begins as fawn-colored macules covered with furfuraceous scales, at first discrete, but soon coalescing as a rule. The lesions are 4 or 5 mm. in diameter before coalescence.

Chief Signs.—Presence of spores, arranged like bunches of grapes, and the mycelium of microsporon furfur in the scraping.

Papulonecrotic Tuberculid (*Acute Necrotica*).—*Characteristics.*—The back of the chest is more often affected than the front. The lesions vary in number from three or four to a score. They occur as nodules in the corium and usually around the hair follicles. The center becomes necrotic and a small ulcer appears, healing with scar tissue.

Chief Signs.—Occurrence usually in young subjects; absence of comedones; scars of previous attacks; limited distribution; disappearance in four to six weeks.

Less Common Causes.—Lichen planus; eczema; senile wart; nevi; molluscum pendulum; pediculosis vestimentorum; favus; mycosis fungoides; sarcoid; lichen scrofulosorum.

HERPES ZOSTER

(*Shingles; Zona*)

The reason for listing herpes zoster as a symptom is that it may be secondary or symptomatic of certain conditions which should not be overlooked in its presence. This caption refers to the condition as confined chiefly to the chest.

Acute Posterior Ganglionitis (*Herpes Zoster per se*).—*Characteristics.*—Herpes zoster may occur as an idiopathic or primary condition. It is commonest on the trunk and is usually unilateral, most frequently occurring on the right side. The eruption is distinctive. It consists of groups of vesicles, arising from an erythematous base, in an area supplied by a dorsal nerve root, occurring in crops, and containing fluid. This may be clear, or in severe cases blood-stained; and in others it may be purulent. The vesicles may break down and form ulcers. From the fifth to the tenth day after their appearance the vesicles begin to dry up and form scales. White scars may result and persist. The patient feels ill, suffers considerable malaise and pain, and the temperature is elevated, before the eruption appears. Severe local pain and sometimes hyperesthesia usually precedes the eruption, and neuralgic pain of a severe character may persist after the rash has disappeared. A second attack rarely occurs.

Chronic Arsenic Poisoning.—*Characteristics.*—Herpes zoster is one of the characteristic cutaneous manifestations. The other most common skin lesions are cutaneous pigmentation and keratosis.

Chief Signs.—See page 26.

Cerebrospinal Meningitis (*Cerebrospinal Fever*).—*Characteristics.*—Herpes zoster may occur in different parts of the body. Other skin eruptions are common

(petechiæ, erythema nodosum, erythema, dusky mottling, hyperemic spots, urticaria, ecthyma, pemphigus, and sometimes gangrene of the skin).

Chief Signs.—See page 89.

Syringomyelia (*Spinal Gliosis*).—*Characteristics.*—A vesicular eruption may occur in certain nerve areas, lasting for a few days, without pain or irritation, and often confined to the analgesic zones.

Chief Signs.—See page 317.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—Herpes zoster is said to occur, usually in the incipient stage, but is not common. It may develop in the course of the lightning pains.

Chief Signs.—See page 89.

General Paresis (*Dementia Paralytica; General Paralysis of the Insane*).—*Characteristics.*—Herpes zoster sometimes occurs.

Chief Signs.—See page 100.

Less Common Causes.—Spinal caries; carcinoma of the vertebræ; tumor of the spinal cord; fracture-dislocation of the spine.

IMPAIRED MOBILITY OF THE CHEST, UNILATERAL OR BILATERAL

(Including Litten's Phenomenon)

A general deficiency in the expansion of the chest, or shallow breathing, may be simply a personal peculiarity, and hence is without definite import. Feeble expansion is best illustrated by the thoracic immobility incident to such conditions as collapse, acute syncope, trance, and the adynamia of acute febrile diseases.

Unilateral deficiency of expansion is demonstrated by inspection, by palpation, by percussion of the lower edge of the lungs posteriorly during quiet breathing and after a deep inspiration, by the fluoroscope, and by Litten's sign. The so-called diaphragm phenomenon, or Litten's sign, is shown most distinctly by placing the patient in the dorsal decubitus with the feet toward a window and the arms extended above the head, the observer standing behind or at the side of the bed. The normal inspiratory descent of the diaphragm is recognized as a faint but appreciable shadow which travels vertically down the lower axilla during each full inflation of the lungs from the sixth to the eighth or ninth intercostal spaces, an extent of three or four inches. This phenomenon, when present and equal on the two sides, shows that the excursions of the diaphragm, the lungs, and the pleura are unrestricted.

Circumscribed deficiency of expansion, showing a local patch of immobility upon the chest-wall, is easily seen by oblique illumination, or if not distinctly visible, may be determined by palpation.

When the impairment is unilateral, the expansion of the opposite side is usually compensatorially increased.

In the senile the respirations are shallow and expansion generally deficient, due to ossification of the costal cartilages.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics.*—The chest movements are limited on the affected side, especially in extensive consolidations

(massive pneumonia), and in those accompanied by widespread pleurisy. On the unaffected side there are vicariously exaggerated respiratory movements, and the same thing is noticed over the upper lobe of a lung extensively consolidated at its base. The diaphragm excursions on the side of the lesion are restricted or absent, especially when there is basal consolidation or diaphragmatic inflammation.

Chief Signs.—See page 357.

Bronchopneumonia.—*Characteristics.*—The thoracic expansion is bilaterally restricted. If there be extensive consolidation at the bases the upper portion of the chest expands more than the lower portion.

Chief Signs.—See page 359.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—Defective expansion of the apex with flattening of the infraclavicular space is an early and important sign. As softening and fibrosis increase, the chest becomes more deformed, and there are circumscribed areas of immobility; the expansion progressively diminishes as the result of the pulmonary destruction and the pleural pain. More or less restriction of Litten's shadow on the affected side may be evident.

Chief Signs.—See page 357.

Hypertrophic Emphysema.—*Characteristics.*—During respiration the thorax rises and falls en masse in a vertical direction, but fails to expand normally. Litten's shadow begins at a lower level and is shorter than in the healthy chest.

Chief Signs.—See page 392.

Pleurisy with Effusion.—*Characteristics.*—The respiratory excursions of the affected side are considerably restricted, and the diaphragm shadow is correspondingly abolished, depending on the amount of effusion, while the opposite side of the thorax shows exaggerated expansion as a matter of compensation.

Chief Signs.—See page 416.

Empyema (*Purulent Pleurisy*).—*Characteristics.*—As in pleurisy with effusion (see above).

Chief Signs.—See page 416.

Hydrothorax.—*Characteristics.*—As in pleurisy with effusion (see above).

Chief Signs.—See page 423.

Acute Pleurisy.—*Characteristics.*—The respiratory movements are shallow and the diaphragm shadow is obscured, especially on the pleuritic side, due to the severe pain.

Chief Signs.—See page 369.

Fracture of the Ribs.—*Characteristics.*—Mobility is restricted on account of pain.

Chief Signs.—See page 369.

Intercostal Neuralgia.—*Characteristics.*—Mobility is restricted on account of pain.

Chief Signs.—See page 369.

Pleurodynia (*Intercostal Myalgia*).—*Characteristics.*—Expansion is limited on account of the pain.

Chief Signs.—See page 369.

Acute Pneumothorax.—*Characteristics.*—The affected side is distended and immobile and the diaphragm shadow abolished, while in contrast to this the opposite half of the thorax shows exaggerated respiratory movements.

Chief Signs.—See page 393.

Bronchial Asthma.—*Characteristics.*—During the paroxysm the chest is fixed in complete inspiration.

Chief Signs.—See page 391.

Chronic Adhesive Pleurisy.—*Characteristics.*—In the average case there is slightly impaired mobility of the chest on the affected side, but when the pleuræ are extensively implicated the affected side expands but little. The diaphragm shadow is restricted or abolished.

Chief Signs.—See page 374.

Fibroid Phthisis.—*Characteristics.*—There is deficient expansion of the affected side, sometimes to the point of practical obliteration. Litten's phenomenon is correspondingly diminished.

Chief Signs.—See page 361.

Chronic Interstitial Pneumonia (*Cirrhosis of the Lung*).—*Characteristics.*—Similar to fibroid phthisis (see above).

Chief Signs.—See page 361.

Bronchiectasis (*Dilatation of the Bronchi*).—*Characteristics.*—In the fully developed case, in which the dilatations have attained considerable size, there is impairment of expansion and of the diaphragm shadow on the corresponding side.

Chief Signs.—See page 359.

Trachial or Bronchial Stenosis.—*Characteristics.*—If a principal bronchus is obstructed, the respiratory movements are restricted on the affected side and the diaphragm shadow diminished. In stenosis above the tracheal bifurcation there is deficient expansion of both lungs.

Chief Signs.—See page 393.

Atelectasis (*Collapse of the Lung*).—*Characteristics.*—If extensive the expansion of the thorax is materially diminished on the affected side, and the diaphragm shadow is correspondingly affected.

Chief Signs.—See page 417.

Carcinoma of the Lungs.—*Characteristics.*—The respiratory mobility of the affected side is sometimes restricted. The diaphragm shadow is limited or abolished if the neoplasm be in the lower part of the thorax, or if the pleura be extensively involved, or if there be a large pleural effusion.

Chief Signs.—See page 362.

Splenomegaly.—*Characteristics.*—If the spleen is greatly enlarged it will cause a left-sided restriction of expansion and an ill-defined diaphragm shadow.

For causes of Splenomegaly, see page 523.

Hepatomegaly.—*Characteristics.*—The same result may follow as in splenomegaly if the liver is much enlarged, the limitation of expansion being on the right side.

For causes of Enlargement of the Liver, see page 520.

Less Common Causes.—Atrophic emphysema; pulmonary syphilis; acute pneumonic tuberculosis; postdiphtheritic paralysis (involving the intercostal muscles and diaphragm); mediastinal tumor; exophthalmic goiter (with ossification of the costal cartilages); acute pericarditis; chronic adhesive pericarditis; subphrenic abscess; ascites; tympanites; large abdominal tumor; foreign body in a bronchus; rheumatism; epilepsy; spasm of the glottis; tetanus; strychnin poison-

ing; diaphragmatic hernia; diaphragmatic pleurisy; peritonitis; subphrenic abscess (usually the right side).

DYSPNEA

(Including *Polypnea*)

(See also "Orthopnea," page 754.)

Dyspnea, difficult or labored respiration, occurs irrespective of rate, rhythm, and depth. The respiratory movements are obviously embarrassed, and in striking cases there is overaction of the accessory muscles of respiration. In extreme cases the patient's face is anxious, his pupils dilated, his skin moist, his tongue and lips dry, his mouth open, the *alæ nasæ* dilated, and the face and lips cyanotic.

Dyspnea may occur normally under stress of emotion, after violent exercise, and in some obese individuals. In active fevers, rapid, difficult breathing is likely to develop from the effect of toxemia. Upward pressure on the diaphragm by enlarged viscera, tumor, meteorism, or ascites is a mechanical cause of dyspnea. Partial asphyxia by bad air, rarefaction of air at high altitudes, and condensation of air in caisson work cause hyperpnea or gasping respiration.

Simple rapid breathing, polypnea or hyperpnea, which is usually attended by shallowness of the respiratory excursion, occurs normally in young children, in neurotics, and in acute fevers. Rapid breathing with deep excursions is physiologic after active exercise.

The special varieties of dyspnea, such as stridulous, stertorous, and Cheyne-Stokes, are considered under special captions which follow.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics*.—At first there is dyspnea only on exertion, later dyspnea at rest as well, and still later, the exaggerated form known as orthopnea, in which the patient must remain propped up in order to breathe. In chronic valvular disease, especially mitral, breathlessness on exertion may occur long before there is actual decompensation.

Chief Signs.—Precordial pains; edema; increasing cyanosis; oliguria and albuminuria; enlarged liver; distention of the jugular veins; cardiac murmurs and arrhythmias; cardiac hypertrophy or dilatation.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics*.—Dyspnea is an almost constant symptom; even early the respirations may be thirty a minute, later increasing to forty or fifty; in children they may reach fifty-five to sixty or more. The respirations are shallow and restrained, and frequently accompanied by an expiratory grunt; inverted rhythm is not uncommon in children. A marked increase during the febrile period usually means a bad prognosis. At the crisis the rate falls, but more slowly than the pulse and temperature, often taking several days to reach the normal.

Chief Signs.—See page 357.

Bronchial Asthma.—*Characteristics*.—During the paroxysm the inspirations are reduced in frequency, sometimes to one-half the normal; they are jerky in character and much shortened in duration, the normal ratio between inspiration and expiration being in extreme cases reversed. In spite of the desperate efforts on the part of the patient, the chest scarcely moves because the lungs are already fully distended.

Chief Signs.—Onset commonly under ten years, persisting to old age; recurring paroxysms. Paroxysm: sudden onset, frequently nocturnal; violent respiratory movements with all the accessory muscles; short inspiration with long, wheezy expiration, slow respirations, cold sweat, small pulse, hyperresonance, numerous râles and noises; cough at the end with expectoration of viscid sputum containing Curschmann's spirals, eosinophils, and Charcot-Leyden crystals; eosinophilia. Interval: may be bronchitis and emphysema; may be associated hay-fever.

Hypertrophic Emphysema.—*Characteristics.*—There may be dyspnea on exertion. The dyspnea is not apt to be marked unless attacks of asthma are associated. Then, the respirations are harsh and wheezy, and expiration prolonged, noisy, and laborious. The dyspnea may be persistent and aggravated by the intercurrent bronchitis.

Chief Signs.—Barrel-shaped chest; harsh, wheezy respiration with prolonged expiration; cyanosis; chronic bronchitis; diminished vocal fremitus; general pulmonary hyperresonance; feeble heart sounds; coarse râles and sibilant rhonchi.

Pulmonary Edema.—*Characteristics.*—The breathing is rapid, with dyspnea or orthopnea.

Chief Signs.—Incessant short cough; copious frothy or blood-tinged expectoration; pallor; sweat; full pulse; dulness posteriorly at the bases; piping, bubbling râles; presence of concomitant cause, such as infectious, kidney, heart, or arterial disease, angioneurosis, pregnancy, epileptic fit.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—Shortness of breath is a frequent complaint but bears little relation to the amount of pulmonary damage. As a rule it is noticeable only on exertion. It is more apt to be present if there is fever, and is apparently dependent also on the nervous condition of the individual.

Chief Signs.—See page 357.

Bronchopneumonia.—*Characteristics.*—Dyspnea gradually becomes a pronounced feature; expiration may be jerky and grunting and followed by a pause. The rate is often as high as sixty or more. Retraction of the lower ribs and sternum during inspiration points to deficient lung expansion, and is a serious sign.

Chief Signs.—See page 359.

Bronchiectasis (*Dilatation of the Bronchi*).—*Characteristics.*—Dyspnea is usually a prominent symptom when the disease becomes well established.

Chief Signs.—See page 359.

Acute Miliary Tuberculosis (*Pulmonary Form*).—*Characteristics.*—From the outset dyspnea is a striking feature and may be out of proportion to the intensity of the physical signs.

Chief Signs.—Possible history of tuberculosis; fever; rapid pulse; sudden onset; marked cough; mucopurulent expectoration, occasionally rusty; cyanosis of the lips and finger-tips; physical signs of bronchitis; defective resonance at the bases or area of hyperresonance; sibilant, sonorous, or fine crepitant râles; occasionally tubercle bacilli in the sputum; x-ray.

Pleurisy with Effusion.—*Characteristics.*—There may be dyspnea at the onset due to fever and pain; later it is due to compression. In the cases with very

rapid effusion dyspnea may be very marked. When, however, the fluid is suffused slowly, dyspnea may not be present except on exertion.

Chief Signs.—See page 416.

Acute Pneumothorax.—*Characteristics.*—Dyspnea is perhaps the most characteristic feature and is so extreme in some cases as to produce a feeling of impending suffocation.

Chief Signs.—Agonizing pain in the side; collapse; small, rapid pulse; immobility and enlargement of the affected side; displacement of the apex beat away from the affected side; absent tactile fremitus, tympany, absent or distant breath sounds, metallic quality to vocal resonance; coin test; may be râles (metallic tinkling) and cough; later, succussion splash and signs of shifting fluid; x-ray.

Uremia (Chronic Bright's Disease).—*Characteristics.*—The dyspnea may be continuous, or paroxysmal, or alternating. It is frequently nocturnal, and the patient may sit up, gasp for breath, and evince as much distress as in true asthma. Occasionally the breathing is noisy and stridulous. The Cheyne-Stokes type may occur and persist for weeks or months.

Chief Signs.—History of renal disease; mental dulness and apathy; twitching of the muscles of the face and hands; headache; vomiting; oliguria, albuminuria, cylindruria, hematuria; high blood urea (blood chemistry); albuminuric retinitis (ophthalmoscopy).

Diabetes Mellitus (Acidosis; Coma).—*Characteristics.*—Loud and deep inspirations and expirations may occur (the air-hunger of Kussmaul). A not unduly rapid respiration with an acyanotic dyspnea is one of the first indications of acidosis; it may come on without premonition and the patient awake from sleep with the dyspnea.

Chief Signs.—See page 344.

Laryngeal, Tracheal, or Bronchial Stenosis.—*Characteristics.*—Inspiratory dyspnea is constant.

Chief Signs.—History or presence of some adequate cause of obstruction or pressure, either intrinsic or extrinsic, to the upper air-passages, of neoplastic or inflammatory nature. Larynx: Alteration of the voice, with pain and rhonchus in the larynx, which rises and falls with respiration; occasionally dysphagia; head held backward; diminution of breath sounds over both lungs; laryngoscopy; x-ray. Trachea: Fixed pain and rhonchus; head depressed and neck extended; diminished breath sounds on both sides; tracheoscopy; x-ray. Bronchus: Fixed pain and thrill with whirring rhonchus; diminished respiratory dilatation of one lung; bronchoscopy; x-ray.

Foreign Body in the Air Passage.—*Characteristics.*—Sudden great dyspnea occurs if the foreign body is not large enough to block the air passages; the breathing is slow as compared with lung disease. Inspiration is prolonged and difficult, with retraction of the lower ribs.

Chief Signs.—History of entrance; violent cough; lividity of the face; writhing; partial insensibility; recurrence of symptoms after a lull; respiratory murmur diminished or absent on the corresponding side if in the bronchus; may be palpable vibrations or sounds if in the trachea; bronchoscopy; x-ray.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—Particularly when involving the transverse arch, dyspnea, due to pressure on a bronchus, the trachea,

or the recurrent laryngeal nerve, may occur with marked stridor. The shortness of breath may occur only on exertion or in paroxysms.

Chief Signs.—See page 377.

Hypostatic Congestion of the Lungs.—*Characteristics.*—Dyspnea is usually slight at the onset but may become marked.

Chief Signs.—Occurrence in enfeebling conditions, especially in old age and fevers; may be cyanosis; basal râles, impaired basal resonance, diminished breath sounds, later feeble bronchial breathing.

Mediastinal Tumor.—*Characteristics.*—Dyspnea is one of the earliest and most constant symptoms (due to tracheal, laryngeal, nerve, or heart pressure, lung involvement, or pleural effusion). It is often severe with paroxysms.

Chief Signs.—See page 362.

Congenital Heart Disease.—*Characteristics.*—Dyspnea may be a marked feature; it may occur only as a result of overexertion or it may be paroxysmal in character.

Chief Signs.—Onset of symptoms at or soon after birth; cyanosis; clubbed fingers; usually a systolic murmur with maximum intensity and conduction not corresponding to acquired murmurs; usually hypertrophy of the right heart; erythremia.

Angina Pectoris.—*Characteristics.*—The paroxysm not rarely is accompanied by a form of asthmatic breathing with wheezing and shortness of breath.

Chief Signs.—See page 367.

Edema of the Glottis (*Edematous Laryngitis*).—*Characteristics.*—There is dyspnea, increasing in intensity until in an hour or two the condition becomes very critical. It may be followed by marked stridor.

Chief Signs.—Occurrence in the course of chronic disease of the larynx, in diphtheria, cellulitis of the neck, infectious disease, nephritis, angioneurotic edema, rarely as a sequel of acute laryngitis; sudden onset; huskiness of the voice followed by aphonia; enormous swelling of the epiglottis (seen and felt); laryngoscopy.

Laryngeal Diphtheria (*Membranous Croup*).—*Characteristics.*—At first the difficulty in breathing is paroxysmal but soon becomes continuous, inspiration and expiration become difficult, particularly the latter, and with the inspiratory movement the epigastrium and lower intercostal spaces are retracted. There is usually inspiratory stridor in the early stage.

Chief Signs.—Occurrence usually in children; hoarseness; harsh cough; cyanosis and “croup”; fever rarely high; marked prostration; cervical adenitis; faucial membrane; culture of the throat (*Klebs-Löffler bacillus*).

Pericarditis with Effusion.—*Characteristics.*—Dyspnea is a common and important symptom, which later may increase to orthopnea associated often with a dusky, anxious countenance.

Chief Signs.—See page 362.

Carcinoma of the Lungs.—*Characteristics.*—Dyspnea is one of the earliest and most common symptoms, and intense dyspnea may occur out of all proportion to the amount of damage demonstrable in the lungs. The difficulty in breathing is usually constant but may be paroxysmal.

Chief Signs.—See page 362.

Acute Laryngitis (*In Children*).—*Characteristics.*—Dyspnea is not uncommon

and may occur in spasmodic attacks and become urgent if there is much edema of the glottis.

Chief Signs.—Dry cough; huskiness or aphonia; painful deglutition; laryngoscopy (cords red and swollen).

Retropharyngeal Abscess.—*Characteristics.*—Noisy dyspnea, often spasmodic, is usually present, the difficulty being noted on inspiration. The head is drawn far backward and with the mouth open.

Chief Signs.—Occurrence in infancy or childhood; difficulty in swallowing; nasal voice; peculiar short cry; external swelling; digital examination (retropharyngeal swelling).

Acute Secondary Anemia (Hemorrhage).—*Characteristics.*—Dyspnea accompanies or follows a severe hemorrhage (“air-hunger”).

Chief Signs.—Obvious bleeding or signs of internal hemorrhage; rapid heart action; faintness; marked pallor; subnormal temperature; blood examination (diminution of red cells and hemoglobin, low color index, polynuclear leukocytosis, moderate anisocytosis and poikilocytosis, few normoblasts).

Chronic Secondary Anemia.—*Characteristics.*—There is shortness of breath on exertion.

Chief Signs.—Presence of some chronic infection, intoxication, repeated hemorrhage, or inanition; palpitation; faintness and weakness; giddiness; swelling of the feet; anorexia, constipation, dyspepsia; pallor; headache and irritability; soft, small, rapid pulse; hemic murmurs; menstrual disturbances or amenorrhea; blood examination (diminution of red cells and hemoglobin, may be poikilocytosis).

Pernicious Anemia.—*Characteristics.*—There is breathlessness and faintness on exertion; as the disease progresses, the dyspnea, faintness, and palpitation are produced by the most trifling exertion or emotion.

Chief Signs.—Insidious onset usually between twenty-five and forty-five years; great weakness; pallor without emaciation; gastro-intestinal disturbances; faintness; palpitation; edema of the feet; tingling and numbness of the feet or hands; may be symptoms of posterior or posterolateral sclerosis (loss of deep sensibility, spasticity); blood examination (low red cell count, color index one plus, deformity of the erythrocytes, polychromatophilia, normoblasts, megaloblasts).

Chlorosis.—*Characteristics.*—Dyspnea is induced by exertion, with palpitation and a tendency to faint.

Chief Signs.—Occurrence in young female adults; pallor with a yellow-green tinge; easy fatigue; giddiness; palpitation; disturbances of menstruation; constipation; headache; cold feet; emotional instability; appetite variable and capricious; blood examination (hemoglobin markedly reduced, red cells about 4,000,000, low color index, may be changes in erythrocytes).

Chronic Myeloid Leukemia.—*Characteristics.*—Shortness of breath may be one of the earliest signs.

Chief Signs.—Occurrence usually between twenty-five and forty years; insidious onset; enlargement of the abdomen (by the spleen); wasting; retinal hemorrhages; cough; attacks of diarrhea; periods of fever; deafness, often sudden; edema of the legs; may be palpable liver; may be various hemorrhages (especially from the nose and gums); blood-cell examination (greatly increased leukocytes; myelocytes

myeloblasts, and transitional white cells; increase of granulocytes; normoblasts and megaloblasts).

Hodgkin's Disease.—*Characteristics.*—Swelling of the mediastinal glands may bring about dyspnea with cough and even cyanosis.

Chief Signs.—Enlargement of the lymph glands, beginning with the cervical, discrete and hard; progressive anemia; enlarged spleen; bronzing of the skin; moderate fever; biopsy; x-ray.

Less Common Causes.—Chronic bronchitis (due to emphysema or heart failure); acute pleurisy; diaphragmatic pleurisy; collapse of the lungs; tuberculous adenitis (tracheobronchial); fibrinous bronchitis; influenza; pneumoconiosis; abscess of the lung; acute bronchitis; hydrothorax; tuberculous bronchopneumonia; atrophic emphysema; acute pneumonic tuberculosis (lobar form); pulmonary infarction; chronic interstitial pneumonia; fibroid phthisis; tuberculous aspiration pneumonia; pleurodynia; hydatids of the liver and lung; gangrene of the lung; thrombosis of the pulmonary artery; carbon monoxid or dioxid poisoning; infectious endocarditis; abscess of the mediastinum (if large); chronic adhesive pericarditis; aneurysm of the heart; perichondritis of the larynx; laryngitis (tuberculous or syphilitic); tabes dorsalis (laryngeal crises); "neurasthenia"; ichthyosis; scleroderma; trichiniasis; myxedema; "hysteria"; quinsy; insolation; typhoid fever; measles; elongated uvula; trench nephritis; epidemic nephritis; tetany; transverse myelitis of the cervical region; Addison's disease; adenoids; acute leukemia; cirrhosis of the liver; dilatation of the stomach; exophthalmic goiter; intrathoracic goiter; tetanus; enlarged thymus; large colloid goiter; myasthenia gravis; rickets; scurvy; pertussis; acute ascending paralysis; Ludwig's angina; angioneurotic edema; acute aortitis; beriberi; salicysm; diaphragmatic hernia; diaphragmatic paralysis; abscess of the liver; intercostal neuralgia; glanders; cerebrospinal meningitis; esophageal tumor; peritonitis; scoliosis; syringomyelia; fecal impaction; fat embolism.

SLOW RESPIRATION

(*Oligopnea*)

Oligopnea or bradypnea occurs in many conditions of coma, collapse, and shock from various causes. Old people tend to breathe much more slowly than young unless there is shortness of breath from emphysema, bronchitis, or myocardial affection. In addition, it may be marked in the following conditions:

Cerebral Concussion.—*Characteristics.*—In the stage of collapse with unconsciousness the respirations are slow and shallow, but as the stage of reaction sets in they become deeper.

Chief Signs.—See page 10.

Cerebral Compression (*From Any Cause*).—*Characteristics.*—In the stage of irritation, in which there may be headache, vertigo, restlessness, delirium, convulsions, vomiting, tinnitus, contracted pupils, choked disk, slow pulse, and elevated blood-pressure, the respirations are more rapid and deeper than normal; but as stupor and coma set in in the stage of fully developed compression, the breathing becomes slow and stertorous; while in the final stage the respirations are rapid, irregular, and of the Cheyne-Stokes variety.

Chief Signs.—Those of the primary lesion, whether depressed fracture of the skull, meningeal hemorrhage, cerebral hemorrhage, hydrocephalus, cerebral tumor, or cerebral abscess.

Diabetes Mellitus.—*Characteristics.*—The “air-hunger” of diabetic coma is characteristic. There is extremely deep, slow breathing with a maximum respiratory excursion both in the intake and in the output of air. The rate begins to fall with the onset of coma progressively from eighteen to sixteen, to fourteen, and down perhaps to even six to a minute. There is a long pause between breaths, and then inspiration starts and without hurry, the stuporous patient goes on drawing air deeper and deeper into his lungs until he can take in no more; the head is thrown slowly back during the process and the mouth opens wider and wider. There is a pause at the height of inspiration before an equally deep, slow, solemn expiration follows, and the head comes forward and the mouth closes partially until the next slow, deep inspiration begins. This breathing is always a sign of grave danger.

Chief Signs.—See page 344.

Uremia.—*Characteristics.*—In some cases of uremic coma bradypnea is pronounced.

Chief Signs.—See page 393.

Acute Alcoholism.—*Characteristics.*—During the stupor the respirations are deep, rarely stertorous, and may be very slow.

Chief Signs.—See page 37.

Opium Poisoning.—*Characteristics.*—During the coma of acute poisoning the respirations become slower and slower, reaching as low as ten per minute.

Chief Signs.—See page 102.

Tuberculous Meningitis (*Basilar Meningitis*).—*Characteristics.*—In a child Biot’s type of breathing may occur, in which two or perhaps three short respirations occur in quick succession, followed by a very long pause. It occurs in those who are approaching death.

Chief Signs.—See page 89.

Tuberculous Adenitis (*Tracheobronchial*).—*Characteristics.*—Delicate children with caseous bronchial glands may have a respiratory rate as low as twelve or even ten per minute for weeks or months even while they are well enough to go to school.

Chief Signs.—See page 361.

Less Common Causes.—Epilepsy (during the seizure); “hysteria”; catalepsy; trance; chloroform narcosis; effect of chloral, veronal, sulphonal, trional, tetronal, medinal, aconite, antimony; analin poisoning; bronchial asthma (paroxysm); malaria (hot stage).

STRIDOR

(*Stridulous Breathing*)

This type of respiration is characterized by a medley of harsh, hissing, or whistling vibratory sounds, especially audible during inspiration. In general, it denotes stenosis or spasm of the main air passages. Respiration through a tracheot-

omy tube produces a rasping sound not unlike that made by filing the teeth of a saw (stridor serraticus).

Foreign Body in the Air Passages.—*Characteristics.*—If the body stops in the larynx, there is an initial laryngeal spasm with marked stridor. Following this there is more or less laryngeal wheezing, a croupy cough, and varying degrees of impairment of phonation. A similar stridor occurs when the body lodges in the trachea, cough occurs at once, and the patient can usually feel the object move. A sudden shutting off of the expiratory blast with aphonia and a paroxysm of cough is almost pathognomonic of a movable foreign body in the trachea. A foreign body passing into a bronchus may or may not cause symptoms of laryngeal spasm. The nearer the obstruction is to the larynx, the greater will be the spasmodic up-and-down movements of the thyroid cartilage and the stridor.

Chief Signs.—See page 393.

Edema of the Glottis (*Edematous Laryngitis*).—*Characteristics.*—The dyspnea increases in intensity and there may be a marked inspiratory stridor.

Chief Signs.—See page 394.

Laryngeal Diphtheria (*Membranous Croup*).—*Characteristics.*—There is often an inspiratory stridor in the early stage, followed by paroxysmal and later continuous dyspnea. There is inspiratory recession above the clavicles with the stridor.

Chief Signs.—See page 394.

Spasmodic Laryngitis (*Spasmodic Croup*).—*Characteristics.*—The child awakes at night with marked dyspnea, especially on inspiration, and there is a loud stridor or crowing as the air is drawn through the narrow opening of the glottis. There is recession of the epigastrium and suprasternal fossa during inspiration. A croupy cough and husky voice accompanies the paroxysm.

Chief Signs.—Occurrence in young children two to four years old, otherwise well; onset of the attack about midnight, possibly preceded in the evening by a hollow barking cough; slight lividity; absence of fever; abrupt cessation of the attack; may be recurrence for two or three nights.

Laryngismus Stridulus.—*Characteristics.*—Respiration ceases, with a period of apnea, during which the child struggles for breath. The seizure terminates with a high-pitched crowing inspiration as the spasm relaxes.

Chief Signs.—Occurrence about eighteen months; frequent association of rickets, tetany, or adenoids; onset at night or early morning; absence of cough and hoarseness; cyanosis; may be convulsions or carpopedal spasm; may be frequent attacks.

Acute Catarrhal Laryngitis in Children.—*Characteristics.*—More or less stridor is present on inspiration, and severe dyspnea occurs in paroxysms, usually at night.

Chief Signs.—Hoarseness; laryngeal cough; fever 101° to 103° F.; laryngoscopy.

Syphilitic Stenosis of the Trachea.—*Characteristics.*—As soon as the stricture begins to offer obstruction to the ingress and egress of air, the patient begins to suffer from dyspnea, persistent or paroxysmal. Suffocative attacks may come on very suddenly without apparent cause or as the result of exertion. The noise produced is known as the "leopard's growl." The difficulty is both inspiratory and expiratory and is usually attended by marked stridor.

Chief Signs.—History of a cough with mucopurulent, blood-streaked expectoration; history and evidence of syphilis; positive Wassermann; bronchoscopy.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—If an aneurysm of the transverse portion constricts the trachea there is an inspiratory stridor, occurring often in paroxysms. The same effect may be produced by pressure on the recurrent laryngeal nerve.

Chief Signs.—See page 367.

Enlarged Thymus (*Thymic Stridor*).—*Characteristics.*—There is a persistent or paroxysmal stridor both inspiratory and expiratory but most marked on inspiration. Children who are subject to this type of breathing may suffer from paroxysmal attacks resembling asthma. The severity of the dyspnea varies tremendously. If the stridor is extremely marked, respiration becomes accelerated and there is sucking in of the suprasternal and infrasternal fossæ.

Chief Signs.—Occurrence in infants and young children; obesity; paroxysms of noisy, stridulous or asthmatic dyspnea; bulging of the upper part of the sternum; palpation of the gland in the suprasternal notch; may be enlarged lymph-nodes, tonsils, and spleen; may be rickets; may be sudden death; lymphocytosis; x-ray.

Congenital Laryngeal Stridor.—*Characteristics.*—Respiration is noisy and inspiration is accompanied by marked croaking, or crowing sounds, and with recession of the soft parts of the chest-wall; yet there is no cyanosis and no subjective distress. The stridor diminishes when the child is quiet but usually does not quite disappear even in sleep.

Chief Signs.—Onset in the first few days of life; disappearance by the end of the second year; may be malformation of the epiglottis.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—Laryngeal crises may occur. If severe, there is pain, stridor, and a feeling of suffocation and impending death, the lips become livid and the skin pale, and there is indrawing of the chest and substernal region. The attack begins and ends suddenly.

Chief Signs.—See page 468.

Less Common Causes.—Intrathoracic goiter; retropharyngeal abscess; bronchial stenosis; dryness of the vocal cords; caseous glands rupturing into the trachea; malignant cervical glands; hydrophobia; "hysteria"; iodism; laryngeal tumor; mediastinal tumor; esophageal tumor; abductor paralysis; strychnin poisoning; tetanus; tracheitis; ulcer of the larynx (posttyphoidal, syphilitic, tuberculous, traumatic); acute laryngitis (streptococcus, pneumococcus, staphylococcus); epithelioma of the vocal cord; fibroma of the vocal cords; epithelioma of the trachea; stenosis after tracheotomy or cut throat; cellulitis of the neck; erysipelas of the throat; Ludwig's angina.

STERTOROUS RESPIRATION

Snoring or stertorous respiration is a well-known sign of profound sleep in many healthy persons who sleep with their mouth open. It occurs also in most cases of deep coma (see Coma, page 675). In the following conditions it occurs during sleep:

Adenoids.—*Characteristics.*—At night the child's sleep is greatly disturbed; the respirations are loud and snorting, and there are sometimes prolonged pauses,

followed by deep, noisy inspirations. The breathing is done with the mouth open.

Chief Signs.—See page 373.

Hypertrophied Tonsils.—*Characteristics.*—In a marked case the most prominent symptoms are those of adenoids, namely, mouth-breathing, disturbed sleep accompanied by snoring, and nasal voice.

Chief Signs.—See page 243.

Nasal Obstruction (*Polypi; Spurs; Septal Deviations; Turbinate Thickening; Bony Ridges; Chronic Rhinitis*).—*Characteristics.*—There is inability to breathe freely through the nose. This is worse at night and often causes mouth-breathing and snoring.

Chief Signs.—See page 161.

Peritonsillar Abscess (*Quinsy*).—*Characteristics.*—The type of breathing seen in adenoids may occur due to the postnasal obstruction.

Chief Signs.—See page 244.

Retropharyngeal Abscess.—*Characteristics.*—The noisy snoring which occurs in this condition has been called “hen-cluck” stertor.

Chief Signs.—See page 395.

Postdiphtheritic Paralysis.—*Characteristics.*—There may be stertorous breathing due to paralysis of the soft palate.

Chief Signs.—See page 251.

CHEYNE-STOKES RESPIRATION

(*and Irregular Respiration*)

Simple irregularity, often temporary, in the rhythm of the respiratory movements, is not necessarily pathologic, since it is often attributable to trivial psychic disturbances. It is, however, a sign of grave import in states of collapse and shock. Cheyne-Stokes respiration is characterized by periodic disturbances of the respiratory rate, rhythm, and volume, alternating with periods of apnea, these two contrasting phases recurring in regular cycles. The quiescent interval is followed by slow and shallow respirations, which progressively increase in both frequency and in volume until they reach an acme, after which they gradually become shallower and slower until, having ceased entirely, another period of apnea begins. This type of breathing may occur in ordinary sleep in infants and old people. In disease, it invariably has a grave, although not necessarily fatal, significance. Meningeal, or Biot's respiration, consists of recurring periods of apnea, ranging from five or ten to twenty or thirty seconds' duration, and separated by intervals marked by irregularity of rhythm and of force. Jerky respiration, characterized by a series of spasmodic interruptions of inspiration and expiration, is another type of irregularity met with.

In infants regular rhythmic respiration is not fully established before the end of the second year.

Coma.—*Characteristics.*—Cheyne-Stokes type of periodic breathing may accompany almost any profound comatose state, but its presence especially suggests factors such as apoplexy, cerebral softening, cerebral tumor, meningitis, uremia, diabetes mellitus, opium poisoning, and fatty heart or other degenerative cardiac lesions.

For causes of Coma, see page 675.

Uremia.—*Characteristics.*—Cheyne-Stokes breathing may occur even without coma. It may persist for weeks or months. Recovery may follow even after its duration for a long period.

Chief Signs.—See page 393.

Arteriosclerosis.—*Characteristics.*—Cheyne-Stokes respiration may be the outstanding feature, denoting progressive softening of the medulla oblongata, with or without granular kidneys. It may occur in simple senile degeneration.

Chief Signs.—See page 437.

Cardiac Decompensation (Heart-Failure).—*Characteristics.*—Toward the close Cheyne-Stokes breathing may occur. It was first described by John Cheyne in a case of fatty heart. The failure may be due to arteriosclerosis, myocarditis, or valvular disease.

Chief Signs.—See page 391.

Tuberculous Meningitis (Basilar Meningitis).—*Characteristics.*—The respiration is at first of normal frequency, but a careful observation during sleep or perfect quiet will often show a distinct irregularity which is very significant. In the stage of coma the respiration is almost always irregular. A very characteristic type consists in the movements becoming deeper and deeper until there is a sigh, followed by a complete arrest of respiration for several seconds, when the phenomenon is repeated. Biot's meningeal type of respiration is also commonly observed, in which two or three deep respirations are followed by a period of apnea of varying duration.

Chief Signs.—See page 89.

Cerebrospinal Meningitis (Cerebrospinal Fever).—*Characteristics.*—Respiration is disturbed very early in the disease, when it is often irregular and may be slow or rapid. Throughout the greater part of the attack it may be nearly normal. Occasionally it is of the typical Cheyne-Stokes variety. Sighing respirations are met with in some instances.

Chief Signs.—See page 89.

Typhoid Status.—*Characteristics.*—In the terminal stages Cheyne-Stokes respiration may develop.

For causes of Typhoid Status, see page 819.

Neurosis ("Hysteria").—*Characteristics.*—Jerky respiration may occur.

Chief Signs.—See page 41.

Chorea (Sydenham's Chorea; St. Vitus' Dance).—*Characteristics.*—Paroxysms of panting and of hard expiration may occur. Simple irregularity and jerky respiration are also observed.

Chief Signs.—See page 45.

Less Common Causes.—Aneurysm of the arch of the aorta (Cheyne-Stokes); caisson disease (Cheyne-Stokes); general paresis (Cheyne-Stokes); severe hemorrhages (Cheyne-Stokes); hydrocephalus (Cheyne-Stokes); internal spinal meningitis (Cheyne-Stokes); septicemia (Cheyne-Stokes); pulmonary fibrosis (Cheyne-Stokes); sunstroke (Cheyne-Stokes); bronchial asthma (jerky inspiration); hemiplegia (jerky inspiration); hydrophobia (jerky inspiration); intercostal neuralgia (jerky expiration); fracture of the ribs (jerky expiration); acute pleurisy (jerky expiration); pleurodynia (jerky expiration); laryngismus stridulous (jerky in-

spiration); myasthenia gravis (jerky respiration); lobar pneumonia (postinspiratory pause); atelectasis (postinspiratory pause); "neurasthenia" (jerky respiration); anilin poisoning (irregular breathing); lesion of the medulla (irregular breathing); rupture or perforation of an abdominal viscus (irregular respiration).

INCREASED VOCAL OR TACTILE FREMITUS

Vocal fremitus is the tactile vibration appreciated by the palm of the hand applied to the chest-wall while the patient is speaking aloud or repeating in a deep voice, "ninety-nine" or, "one, two, three." The intensity of the vibrations depends upon the loudness and pitch of the voice and upon the conducting qualities of the structures between the larynx and the palpator's hand. It is more intense in adults than in children, in men more than in women, in persons of loud, low-pitched, harsh voice, and in thin, spare individuals. Normally it is relatively exaggerated over the right side of the thorax, especially in the infraclavicular and interscapular regions, and on the dependent side when the lateral decubitus is assumed. The voice vibrations are clearly conducted by the clavicle even as far as its outer extremity. They are faint over the scapulæ, the sternum, and the female mammæ, and are absent over the areas of immediate contact of the heart, liver, and spleen to the thorax.

The vibrations of coarse bronchial and tracheal râles are sometimes felt upon the surface of the chest, especially during inspiration. This variety is known as rhonchal fremitus. It occurs in bronchitis and asthma.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics*.—Vocal fremitus is greatly increased over the consolidated lobe or lobes in comparison with the unaffected side; but if the bronchi are filled with thick secretion, or if, as in massive pneumonia, the main bronchus is filled with a fibrinous exudate, the vibrations may be diminished. The patient should be made to cough before the test is made, in order, if possible, to clear out the bronchi. A coexisting pleural effusion also prevents the increase of tactile fremitus.

Chief Signs.—See page 412.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics*.—Fremitus is increased over an area of tuberculous infiltration not too deep-seated nor too effectually covered by emphysema, atelectasis, or thickened pleura. In view of the relative increase of vocal fremitus at the right apex, it follows that equal fremitus at both apices denotes either undue increase on the left side or abnormal decrease on the right. In general, the more compact the infiltration, the better its conduction of the voice vibrations. Over an empty superficial cavity vocal fremitus is greatly magnified.

Chief Signs.—See page 412.

Pulmonary Infarction.—*Characteristics*.—An infarct which has a peripheral extent of over 5 square cm. gives rise to increased tactile fremitus over the local area of consolidation.

Chief Signs.—See page 360.

Compensatory Emphysema.—*Characteristics*.—In the simple acute form there is exaggeration of vocal fremitus on the emphysematous side. If of long standing, however, the reverse is true.

Chief Signs.—See page 376.

Less Common Causes.—Acute congestion of the lungs; collapse of the lung (when consolidated); syphilis of the lung; bronchiectasis (when there is an empty superficial cavity); fibroid phthisis (at the apex); chronic interstitial pneumonia (unless the pleura is much thickened); bronchopneumonia (with confluent and superficial lesions); acute pneumonic tuberculosis (lobar form); abscess of the lung (with an empty superficial cavity); actinomycosis; intrathoracic neoplasm (when dense and situated near a bronchus); atrophic emphysema; tuberculous bronchopneumonia (in scattered patches).

DIMINISHED VOCAL OR TACTILE FREMITUS

(See also the caption note under "Increased Vocal or Tactile Fremitus," page 402.)

Pleurisy with Effusion.—*Characteristics.*—Tactile fremitus is greatly diminished or abolished below the level of the fluid, though the voice vibrations may be transmitted through the fluid by bands of adhesions or by a bronchus dislocated against the chest-wall, while in other cases they may travel, via an overresilient parietes, from the sound to the affected side. In children there may be much effusion with retention of fremitus. With small effusions there may be only enfeeblement. Absence of voice vibrations is, however, one of the most convincing signs of a collection of fluid within the pleura.

Chief Signs.—See page 416.

Empyema (Purulent Pleurisy).—*Characteristics.*—Similar to pleurisy with effusion (see above).

Chief Signs.—See page 416.

Acute Pneumothorax.—*Characteristics.*—The fremitus is diminished or entirely lost over the air-distended pleura, though toward the apex there may be intense voice vibrations referable to pulmonary compression or consolidation.

Chief Signs.—See page 416.

Hypertrophic Emphysema.—*Characteristics.*—There is usually some enfeeblement over both lungs universally. When decided bronchial catarrh coexists, there is rhonchal fremitus.

Chief Signs.—See page 416.

Chronic Bronchitis.—*Characteristics.*—Vocal fremitus is feeble than normal, due to the associated emphysema.

Chief Signs.—See page 359.

Pulmonary Edema.—*Characteristics.*—Palpation over the water-logged, inelastic lungs detects little or no vocal fremitus, while above the edematous bases rhonchal vibrations are frequently felt.

Chief Signs.—See page 411.

Hydrothorax.—*Characteristics.*—Similar to pleurisy with effusion (see above).

Chief Signs.—See page 423.

Chronic Adhesive Pleurisy.—*Characteristics.*—Tactile fremitus is ordinarily enfeebled or abolished over areas of simple pleural thickening, but may be clearly conducted to the surface by bands of pleuropulmonary adhesions.

Chief Signs.—See page 374.

Compensatory Emphysema.—*Characteristics.*—In long-standing cases the fremitus is enfeebled as in hypertrophic emphysema.

Chief Signs.—See page 376.

Bronchial Asthma.—*Characteristics.*—During the paroxysm the pulmonary overdistention and the bronchial obstruction together enfeeble, if not abolish, vocal fremitus. At the same time, however, pronounced rhonchal fremitus is a familiar tactile sign.

Chief Signs.—See page 391.

Tracheal or Bronchial Stenosis.—*Characteristics.*—Vocal fremitus is diminished or absent over the distribution of the obstructed tube, the alteration in intensity being bilateral in tracheal stenosis, and unilateral in bronchial obstruction.

Chief Signs.—See page 393.

Atelectasis (Pulmonary Collapse).—*Characteristics.*—Extensively collapsed, toneless pulmonary tissue, being a poor conductor of vibrations, weakens vocal fremitus, though if consolidated, the fremitus is clearly transmitted if not exaggerated.

Chief Signs.—See page 417.

Carcinoma of the Pleura.—*Characteristics.*—The pleural involvement and the usually coexisting exudative pleurisy dampen the voice vibrations to the point of abolition.

Chief Signs.—See page 425.

Mediastinal Tumor.—*Characteristics.*—Tactile fremitus is usually abolished over the growth and its infiltrative extensions.

Chief Signs.—See page 362.

Chronic Passive Congestion of the Lungs.—*Characteristics.*—In simple cases tactile fremitus is enfeebled over the bases posteriorly, though it is increased if much fibrosis has developed.

Chief Signs.—Evidence of cardiac decompensation; dyspnea; cough with thin watery sputum containing "heart-failure" cells; dulness, impaired breath sounds, and râles at the bases; may be hemoptysis.

Less Common Causes.—Bronchiectasis; acute bronchitis (when the bronchi are plugged); fibroid phthisis (if there is pleural thickening, emphysema, bronchial obstruction, or lung retraction); chronic interstitial pneumonia (with pleural thickening); bronchopneumonia (with widely disseminated and deep infiltrations surrounded by emphysema); lobar pneumonia (with bronchial obstruction or pleural exudation); pneumoconiosis; pulmonary neoplasm (variable); hydatid cyst of the lung; interlobar pleurisy; hemothorax; chylothorax; pericarditis with effusion; subphrenic abscess (axillary region).

PLEURAL FRICTION FREMITUS

(See also "Friction Fremitus over the Precordia," page 434.)

Pleural friction fremitus applies to the tactile vibrations which feel superficial and have a fine, rasping, or even creaking quality. It is appreciated most easily during deep inspiration and by pressure upon the intercostal spaces, but it may disappear temporarily after a few deep inspirations. It is most frequently encountered in the infra-axillary and lower mammary regions.

Acute Pleurisy.—*Characteristics.*—Distinct friction fremitus is sometimes palpable

pable over the inflamed pleural surfaces, but disappears if fluid accumulates. If the pleural inflammation involves the portion of the visceral pleura which overlies the pericardium, the friction fremitus assumes the pleuropericardial type.

Chief Signs.—See page 369.

Chronic Adhesive Pleurisy.—*Characteristics.*—Friction fremitus of a coarse, grating quality is appreciable over patches of mobile pleural thickening.

Chief Signs.—See page 374.

Less Common Causes.—Interlobar pleurisy; encysted pleurisy; carcinoma of the pleura; fibroid phthisis; chronic interstitial pneumonia.

DULNESS OR FLATNESS ON PERCUSSION

The note obtained by percussing the normal chest varies a great deal in different areas. The percussion sound is somewhat less resonant in the right infraclavicular region than in the left and to a minor degree also, is less resonant in the right supraclavicular region than in the left. Anteriorly, on the right side the dulling effect of the liver is encountered in the midclavicular line below the fourth rib, and in the anterior axillary line below the sixth rib. On the left side, below the fourth rib, the dulness of the heart modifies the percussion sound within the midclavicular line, while between this line and the axilla the influence of gastric tympany is apparent below the fifth rib. On both sides resonance is obscured over the site of the great pectoral muscles, and the mammary glands. Laterally, hepatic dulness on the right side, and gastric tympany (perhaps, also, splenic dulness) on the left side, modify the resonance of the lower axillæ. Posteriorly, the percussion sound is nowhere so resonant as it is anteriorly, especially above and over the scapulæ and over the spine. The lower border of the lungs extends normally, in quiet respiration, to the tenth rib in the scapular line, while on deep respiration, the resonant area descends about one inch. In early childhood the lower pulmonary borders are higher, and in advanced life lower than they are in the intervening periods. Resonance is generally less marked in the obese and the muscular, and in those who possess a rigid thorax. In the lateral decubitus the dependent side is relatively dull on percussion. Light percussion gives better results than heavy.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—In early phthisis impaired resonance at one apex, in the clavicular, suprascapular, and interscapular regions, may be obtained. This evidence of moderate infiltration becomes gradually accentuated as the consolidation increases in density and in extent, until finally the sound becomes frankly dull and the resistance extreme. Impaired resonance over the apex of the other lung is then usually obtainable as the other lung becomes involved. As the tuberculosis spreads through the lungs, the dulness correspondingly extends, acquiring, over areas of dense fibrous and pleural thickening, a characteristic wooden quality quite different from the dulness of airless lung.

Chief Signs.—See page 412.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics.*—When the lung is hepatized the percussion note is dull, varying from a note with a tympanitic quality to absolute flatness. There is not, however, the wooden flatness of effusion, and the sense of resistance is not so great. The area of dulness corresponds to the lobe or lobes consolidated.

Chief Signs.—See page 412.

Pleurisy with Effusion.—*Characteristics.*—In small effusions there may be only a narrow zone of basal flatness posteriorly; as the effusion increases its earliest effects are the substitution of flatness for normal hepatic dulness if on the right side, and for normal tympany if on the left side. Over a moderate effusion reaching to the fourth rib anteriorly the upper level of flatness follows an undulating line curving from behind forward (Ellis's S-shaped line). The percussion sound changes from impaired resonance to dulness and finally to flatness of a high-pitched wooden quality as the exudate increases, and there is a woodenlike resistance to the finger. Posteriorly in moderate or large effusions, Grocco's paravertebral triangle of dulness on the opposite side is practically a constant indication of free fluid within the plural sac. It is found from the ninth to the twelfth ribs with the apex up and its base 2 to 5 cm. in width.

Chief Signs.—See page 416.

Empyema (Purulent Pleurisy).—*Characteristics.*—The physical signs are similar to those of pleurisy with effusion (see above). In encapsulated or encysted empyema, the area of dulness is circumscribed. In interlobar empyema there may be circumscribed dulness bordered by skodaic hyperresonance localized in the interlobar line (usually between the right upper and middle lobes) near the levels of the fourth and fifth ribs anteriorly or posteriorly.

Chief Signs.—See page 416.

Hydrothorax.—*Characteristics.*—The physical signs are essentially those of pleurisy with effusion, without, however, the initial pleural friction sound. Occasionally limited to the right side of the thorax (especially if of cardiac origin), the effusion is often bilateral (when of renal origin), but is invariably greater on the right side.

Chief Signs.—See page 423.

Chronic Passive Congestion of the Lungs.—*Characteristics.*—Percussion elicits slight basal dulness, and above it a general hyperresonance may be found.

Chief Signs.—See page 404.

Pulmonary Edema.—*Characteristics.*—Dulness and increased resistance are elicited over the bases posteriorly, with progressive upward extension as the process spreads (in cases of fulminating edema, however, there may be general hyperresonance).

Chief Signs.—See page 417.

Pulmonary Infarction (Pulmonary Embolism; Pulmonary Apoplexy).—*Characteristics.*—If large there may be diminished resonance or dulness over a sharply circumscribed area commonly situated posteriorly over a lower lobe.

Chief Signs.—See page 413.

Bronchopneumonia.—*Characteristics.*—As the infiltrations grow and extend toward the surface of the lung, scattered patches of impaired resonance, sometimes amounting to actual dulness, may be made out; though coexisting areas of emphysema may ingraft their quality upon the bronchopneumonic sound so that dull hyperresonance is elicited.

Chief Signs.—See page 413.

Atelectasis (Pulmonary Collapse).—*Characteristics.*—In stenosis or obstruction of a principal bronchus, the percussion note is dull over the area of distribution

of the bronchus, or over the entire lung. In minor degrees of stenosis, however, the note may be hyperresonant due to compensatory emphysema adjacent to the area of atelectasis. Deeply seated areas of atelectasis fail to yield dullness.

Chief Signs.—See page 417.

Fibroid Phthisis.—*Characteristics.*—Percussion of the apex on the diseased side elicits impairment of resonance owing to retraction of the pulmonary apex. In cases with extensive pleural thickening the percussion note is impaired and there is a marked sense of resistance as appreciated by the pleximeter finger.

Chief Signs.—See page 361.

Chronic Interstitial Pneumonia.—*Characteristics.*—As a rule, percussion of the thorax over the area of the retracted lung yields a dull or flat note. The superior limit of the pulmonary resonance is diminished on the side of the disease as a result of retraction of the apex of the lung. Similarly, in involvement of the right lung the lower border of pulmonary resonance is elevated, the liver pushing the diaphragm upward; whereas in left-sided disease the tympany of Traube's semilunar space extends to an abnormally high level.

Chief Signs.—See page 361.

Chronic Adhesive Pleurisy.—*Characteristics.*—The percussion note is strikingly dull and the resistance to the pleximeter marked in cases with obliteration of extensive portions of the potential pleural cavity.

Chief Signs.—See page 417.

Carcinoma of the Lung or Pleura.—*Characteristics.*—Dulness is produced by a large, diffuse, superficial tumor, and wooden flatness by extensive pleural implication.

Chief Signs.—See page 425.

Cardiac Hypertrophy or Dilatation.—*Characteristics.*—The lung area is encroached on by the increased cardiac dulness, depending on the part of the heart affected. There is also encroachment on Traube's semilunar space (left) and obliteration of Ebstein's cardiohepatic angle (right).

Chief Signs.—See page 434.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—An aneurysm of the ascending portion produces dulness to the right of the manubrium; of the transverse arch, in the middle line; of the descending portion, in the left interscapular and scapular regions near the spine. An unnaturally broad zone of supraclavicular dulness, with increased tactile resistance, is frequently appreciable long before other physical signs appear.

Chief Signs.—See page 430.

Aortitis.—*Characteristics.*—When the aorta has become weakened so that dilatation results, there is dulness beneath the manubrium.

Chief Signs.—See page 454.

Pericarditis with Effusion.—*Characteristics.*—There is increased precordial percussion flatness of irregular pear-shape with its broad base downward and its apex upward toward the manubrium. There may be flatness in the left interscapular region. The normal acuteness of the cardiohepatic angle is made obtuse by the sagging of the pericardial sac, and the upper limit of Traube's space may be encroached upon. Compression of the left lung by a large effusion may cause a mid-axillary area of dulness or of skodaic resonance, affected by postural changes.

Chief Signs.—See page 362.

Intrathoracic Goiter.—*Characteristics.*—On percussion there is dulness over the upper portion of the sternum and this may extend to either side, upward and toward the clavicles.

Chief Signs.—Sense of suffocation on exertion or when lying down; husky or metallic voice; dyspnea on exertion; swelling of the veins of the neck; cyanosis of the face; presence of goiter disappearing beneath the sternum; x-ray.

Mediastinal Tumor.—*Characteristics.*—There may be an area of dulness or flatness often silent on auscultation, corresponding to the site of the tumor, in the immediate neighborhood of which hyperresonance is the rule. Abnormal modifications of the percussion sound are also likely to be found over other parts of the thorax when associated pulmonary or pleural lesions exist. Ordinarily, however, a tumor deep within the mediastinum is far beyond the reach of percussion. A patch of irregularly shaped dulness or flatness may be delineated in the interscapular region. The basal flatness of intrapleural fluid may also be present.

Chief Signs.—See page 432.

Tuberculous Adenitis (Tracheobronchial).—*Characteristics.*—There may be dulness at the upper part of the sternum under occasional circumstances. Extension of the normal dulness over the upper four thoracic vertebræ to the fifth and sixth is important and there may be prevertebral dulness on delicate percussion.

Chief Signs.—See page 361.

Enlarged Thymus.—*Characteristics.*—There is a triangular area of dulness easily determined by median percussion over the sternum. The dulness extends beyond the edges of the sternum and is nearly always more marked to the left than the right. On the left the dulness can be elicited in the first and second interspaces and occasionally in the third, and it may merge into the heart dulness below; on the right it is elicited in the first interspace and less frequently in the second. The dulness is more marked in the prone position.

Chief Signs.—See page 399.

Splenomegaly.—*Characteristics.*—Vertical left axillary dulness is present often with palpable enlargement below the left costal margin. Palpation, however, is a more effective method of determining moderate splenic enlargement, as the organ descends with inspiration.

For causes of Splenomegaly, see page 523.

Hepatomegaly.—*Characteristics.*—Dulness is increased over the liver area, often with palpable enlargement below the right costal margin.

For causes of Enlargement of the Liver, see page 520.

Less Common Causes.—Acute miliary tuberculosis of the lungs (scattered patches over the bases in children); acute pneumonic tuberculosis (lobar dulness when fully developed, preceded by hyperresonance, in the lobar form; scattered patches of dulness in the bronchopneumonic form); aneurysm of the descending thoracic aorta (left subscapular region); mediastinal abscess (interscapular); pneumothorax (when distention is extreme); chronic mediastinitis (sternal and parasternal); pulmonary syphilis (in patches or with signs of collapsed lungs); abscess of the lung (when large and superficial); subphrenic abscess (in the mammary or midaxillary line or the right base); acromegaly (over the manubrium); pulmonary actinomycosis (base or axilla); bronchiectasis (where surrounded by

condensed lung tissue); gangrene of the lung (where large and superficial); collapse of the lungs (strip on each side of the spine); typhoid fever (dullness over the right base); fecal accumulation (Traube's space); hydatids of the lung (when superficial); hydropneumothorax (shifting with position); pneumoconiosis (especially at the right apex); renal tumors (over the lower ribs and upper part of the loin); veronal poisoning (patches); fibrinous bronchitis (with plugged bronchus); atrophic emphysema; hemothorax; chylothorax; Hodgkin's disease (with mediastinal involvement).

HYPERRESONANCE OR TYMPANY ON PERCUSSION

Hyperresonance is an increase in the normal vesicular resonance characterized by an abnormal clearness of the percussion sound; tympany represents the acme of hyperresonance, percussion yielding a drumlike sound. Several varieties of hyperresonance and tympany occur. Skodaic tympany or resonance differs from tympany in that the pitch is uniform and not altered upon opening or closing the mouth or upon changes of posture. Wintrich's change of sound occurs when percussion is performed over a superficial pulmonary cavity with the patient's mouth closed and with it open; the tympany is of higher pitch with the mouth open. Wintrich's interrupted change of sound occurs when a pulmonary cavity contains fluid which is freely mobile and shifts position readily with change of posture, alternately occluding and leaving unoccluded the bronchial communication of the cavity. Friedreich's respiratory change of sound occurs when a superficial pulmonary cavity with patent bronchial communication possesses a higher pitch during inspiration than during expiration. Gerhard's change of sound denotes a change of pitch with change of posture when a superficial pulmonary cavity is partially filled with mobile fluid, and when its vertical and horizontal diameters are unequal. In hydropneumothorax Biermer's phenomenon is noted, namely a lower-pitched tympany in the recumbent posture and a higher-pitched note when sitting. William's tracheal tone applies to the tympany imparted by the trachea when percussion is performed over an apical consolidation. Amphoric resonance is a tympanitic note of clanging, echoing, metallic quality of longer duration than pure tympany. It is elicited over superficial pulmonary cavities of irregular configuration and with smooth, tense walls which are free from secretion. The cracked-pot sound is usually produced over a superficial and empty pulmonary cavity from which air is suddenly expelled by the percussion stroke; it has a peculiar "clinking" quality, similar to that produced by clasping the hands palm to palm so as to enclose an air space which communicates with the outer air through a chink left open, and then striking the under hand against the knee. Bell tympany applies to a distinctive metallic echo elicited by auscultating over the lower thorax posteriorly while an assistant percusses at the same level anteriorly, using the edge of one large silver coin as a plexor and the flat surface of another as a pleximeter. The "lung reflex" denotes a change from resonance to hyperresonance after prolonged and vigorous percussion. Pulmonary hyperresonance commonly accompanies the extremes of life. In scoliosis circumscribed patches of compensatory hyperresonance may be found opposite to the vertebral convexity.

Hypertrophic Emphysema.—*Characteristics.*—Percussion yields a hyperresonant note over both lungs; and the limits of pulmonary resonance are extended in all directions, upward into the root of the neck, anteriorly, encroaching upon the cardiac dullness, and inferiorly over the areas of hepatic and splenic dullness. The respiratory excursion of the lungs, as determined by percussing the lower borders of the lungs during expiration and inspiration, is greatly diminished, rarely exceeding half an inch.

Chief Signs.—See page 416.

Compensatory Emphysema.—*Characteristics.*—There is hyperresonance over the sound side with dulling of the note over the crippled lung.

Chief Signs.—See page 376.

Bronchiectasis (*Dilatation of the Bronchi*).—*Characteristics.*—If there be a large superficial cavity which has been emptied by a paroxysm of coughing, it yields tympany or a cracked-pot sound upon percussion. In suitably situated cavities all of the signs of pulmonary cavity, such as Wintrich's change of sound, Friedreich's respiratory change of sound, and the change of sound of Gerhardt, may be elicited. These signs disappear and reappear due to filling and emptying of the cavity, which is usually at the base of the lung.

Chief Signs.—See page 359.

Bronchial Asthma.—*Characteristics.*—The quality of the percussion note varies from a moderate hyperresonance during mild paroxysms to a nearly tympanitic note in severe attacks in emphysematous subjects. The limits of pulmonary resonance are extended in all directions.

Chief Signs.—See page 391.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics.*—During the stage of engorgement, exaggerated resonance, commonly of a skodaic quality, is found over the affected lung, and a similar hyperresonance is also elicited later above the level of a hepatized area. If an upper lobe be consolidated, Wintrich's sign is frequently demonstrable, and a cracked-pot percussion sound is not uncommon. In extensive unilateral consolidations the opposite lung is vicariously hyperresonant.

Chief Signs.—See page 412.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—A tympanitic note elicited during the stage of advanced phthisis is usually indicative of tuberculous or bronchiectatic cavity formation. A similar tympanitic note may, however, be produced by an area of superficial consolidation which is immediately superimposed upon a large bronchus. The "cracked-pot sound," and amphoric "jug-sound" are also to be sought for, as well as the several special tonal changes described by Wintrich, Williams, Friedreich, and Gerhardt. Signs of cavity in the upper lobes point strongly to tuberculosis rather than to a bronchiectatic origin. It is sometimes possible to empty an apical cavity, which, when full, yields dullness on percussion, by gently rapping upon the overlying chest-wall with a hard instrument, the effect being to excite a coughing fit which expels the secretion and thereby develops cavernous signs (Erni's sign). Cavity tympany is elicited in about 70 per cent of cases in which excavation exists.

Chief Signs.—See page 412.

Pleurisy with Effusion.—*Characteristics.*—Over the compressed and vicariously distended lung above the effusion skodaic resonance is obtained.

Chief Signs.—See page 416.

Empyema (*Purulent Pleurisy*).—*Characteristics.*—Skodaic resonance is elicited above the level of the pus. In interlobar empyema, the interlobar area of dulness, if obtainable, may be bordered by a similar skodaic sound.

Chief Signs.—See page 416.

Hydrothorax.—*Characteristics.*—As in pleurisy with effusion (see above).

Chief Signs.—See page 423.

Pulmonary Edema.—*Characteristics.*—Over the anterior surface of the chest in the infraclavicular and mammary regions, skodaic resonance is not infrequently encountered.

Chief Signs.—See page 417.

Bronchopneumonia.—*Characteristics.*—Coexisting emphysematous territories about the consolidated patches may engraft their quality upon the bronchopneumonic sound so that dull hyperresonance is elicited. Above the site of consolidation the sound is likely to be typically hyperresonant.

Chief Signs.—See page 413.

Acute Pneumothorax.—*Characteristics.*—Generally, the percussion sound is unduly loud, sonorous, and hyperresonant, though sometimes it is dull, muffled, and toneless, and exceptionally it is tympanic or even amphoric. Cracked-pot resonance with Wintrich's sign may be elicited over a pneumothorax communicating with a patulous bronchus. The percussion resistance varies from a sort of "air-cushion" sensation to one of boardlike resistance. The opposite side may give the hyperresonance of emphysema.

Chief Signs.—See page 416.

Abscess of the Lung.—*Characteristics.*—When the abscess has recently discharged a considerable portion of its purulent contents, and is superficially located, the sound elicited by forcible percussion of the region is tympanic or amphoric. If the abscess cavity possesses a patent bronchial communication the cracked-pot sound or the phenomena of Wintrich, Friedreich or Gerhardt may be elicited. The area about the angle of the scapula is the most frequent site of cavity signs.

Chief Signs.—See page 360.

Less Common Causes.—Hemothorax (above the effusion); chylothorax (above the effusion); acute vesicular emphysema; pulmonary neoplasm (with cavity from degeneration); pulmonary infarction (when large and superimposed upon a principal bronchus); acute pulmonary congestion; fibroid phthisis (hyperresonance on the emphysematous side and over circumscribed patches adjacent to the seats of fibrosis); chronic interstitial pneumonia (as in fibroid phthisis); pulmonary gangrene (over a large superficial cavity); pulmonary abscess (over a large superficial cavity); pulmonary actinomycosis (over a large superficial cavity); pneumoconiosis (when emphysematous); atelectasis (when a large patch is tightly compressed against a large patent bronchial tube); atrophic or senile emphysema; acute pneumonic phthisis (preceding the development of dulness); crying fit in children; acute miliary tuberculosis of the lungs (tympany over small areas with the onset of consolidation); atrophy of the liver; dilatation of the stomach; edema of the lungs (fulminating); pulmonary syphilis (with large cavitation); perforation

of the stomach or bowel; transposition of viscera (precordia); distended colon; diaphragmatic hernia (amphoric resonance from pneumothorax and air-containing viscera); eventration of the diaphragm; paralysis of the diaphragm; subphrenic abscess (on the right side when the abscess contains air); mediastinal tumor (in the immediate neighborhood of the tumor); pericarditis with effusion (midaxillary region from compression of the left lung).

BRONCHIAL BREATHING

(*Tubular Breathing*)

(See also "Cavernous and Amphoric Breathing," page 414.)

Bronchial breathing is distinguished by its loud, blowing, tubular quality, high pitch, and the distinct interval of silence between inspiration and expiration. Expiration is generally more intense, higher pitched, and more distinctly tubular than inspiration. The duration of the respiratory phases is about equal, though expiration may be longer. It is merely the unmodified sound of the laryngotracheal murmur.

Bronchovesicular breathing is a mixture of the bronchial and vesicular murmurs, and is normally audible over and alongside the sternum at the level of Louis' angle, over the interseapular spaces on each side of the spine at the level of the third or fourth thoracic vertebræ, and in the right supraclavicular and infraclavicular regions. The sound is louder and decidedly more bronchial in tone on the right side.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics*.—In the stage of red hepatization the respiration over the area of the consolidated lobe or lobes is tubular, similar to that heard in health over the large bronchi. It is heard first with expiration and is soft and of low pitch. Gradually it becomes more intense and finally presents an intensity unknown in any other pulmonary affection; it is then of high pitch, perfectly dry, and of equal length with inspiration and expiration. It is absent, however, in those rare cases of massive pneumonia in which the larger bronchi are completely filled with exudation, and in cases of central pneumonia. When resolution sets in mucous râles of all sizes can be heard. Usually within a week or ten days the breath-sounds become normal. In cases of delayed resolution, however, the tubular breathing, flatness, and râles persist for several weeks.

Chief Signs.—Acute onset with rigor and fever; pain in the side; cough with blood-tinged, tenacious sputum; short, rapid respiration with expiratory grunt; face flushed and eyes bright; herpes; pulse full and bounding (pulse-respiration ratio often two to one); temperature around 104 degrees, terminating by crisis between the fifth and tenth days; physical signs of lobar consolidation (dulness, bronchial breathing, bronchophony); later râles redux; leukocytosis.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics*.—In the incipient stage of beginning apical infiltration the inspiratory murmur may be either feeble and distant or loud and harsh, but as the infiltration extends the respiration becomes bronchovesicular and finally bronchial. Laennec's "veiled puff," recognized as an abrupt bronchial tone toward the end of an inspiration which begins as a vesicular sound, is a somewhat distinctive early sign. Over a small cavity the

breathing is tubular, while over a large one cavernous and amphoric sounds are usually audible (see Cavernous and Amphoric Breathing, page 414).

Chief Signs.—Insidious onset; loss of weight, strength, and appetite; persistent cough, worse in the morning; may be hemoptysis; night sweats; pallor; afternoon pyrexia; rapid pulse; crepitant râles at one apex brought out by coughing (incipient stage), with changes in the breath sounds and slightly impaired resonance; diminished expansion; later signs of consolidation or cavitation, and extension to the other apex; tubercle bacilli in the sputum; tuberculin test; x-ray.

Bronchopneumonia.—*Characteristics.*—When numerous foci consolidate, the breathing becomes tubular; in smaller disseminated patches the breathing is more harsh than blowing, of a bronchovesicular quality.

Chief Signs.—Preceding bronchitis, acute fever, debility, or chronic disease (may be primary under two years); gradual onset; rapid respiration; rapid pulse; cough with mucopurulent or blood-tinged sputum; fever 102 to 104 degrees, falling by lysis usually in two to three weeks; bilateral fine râles, but no definite dulness; later, louder râles; leukocytosis.

Pleurisy with Effusion.—*Characteristics.*—Loud bronchovesicular or bronchial breathing is produced by the compressed lung above the upper limit of the effusion. On the unaffected side there is a compensatory exaggeration of the breath sounds. In children, distant though distinct tubular or even amphoric respiration may be heard through the effusion.

Chief Signs.—See page 416.

Empyema (*Purulent Pleurisy*).—*Characteristics.*—Occasionally in children with a large effusion, the breathing may be loud and bronchial in character.

Chief Signs.—See page 416.

Pulmonary Infarction (*Pulmonary Embolism; Pulmonary Apoplexy*).—*Characteristics.*—Bronchial breathing is heard over a sharply defined, circumscribed area commonly situated posteriorly over a lower lobe, if the infarct is large.

Chief Signs.—Presence of valvular heart disease, phlebitis, or previous operation; sudden sharp pain in the side; cough; abrupt rise of fever and pulse rate; pleural friction; if large, impaired resonance and tubular breathing.

Atelectasis (*From Effusion, Neoplasm, Aneurysm, or Bronchial Stenosis*).—*Characteristics.*—The respiratory murmur is generally suppressed or quite lost, but over a dense peribronchial patch bronchovesicular or bronchial breathing may be heard.

Chief Signs.—See page 417.

Acute Pneumonic Tuberculosis (*Lobar Form*).—*Characteristics.*—In the stage of consolidation bronchovesicular breathing is succeeded by bronchial breathing, usually over an upper lobe and exceptionally over an entire lung.

Chief Signs.—Acute or subacute onset; symptoms and physical signs of lobar pneumonia without crisis; irregular temperature; rapid pulse; rapid wasting; prostration; persistence of consolidation followed by cavitation; tubercle bacilli in the sputum; gradual failure and death (usually about two months).

Acute Tuberculous Bronchopneumonia (*"Gallop Consumption"*).—*Characteristics.*—Auscultation reveals scattered patches, especially apical, over which bronchovesicular or even tubular breathing with bronchophony and small moist râles are heard.

Chief Signs.—Abrupt onset; rigors; dyspnea; cough; high temperature; rapid pulse; sweats, mainly at night; wasting; physical signs of diffuse bilateral bronchitis; later, areas of consolidation, especially at the apices; typhoid state; tubercle bacilli in the sputum; x-ray; death in three weeks to two months.

Fibroid Phthisis.—*Characteristics.*—At the apices there may be bronchovesicular or even bronchial or amphoric breathing if there is a compact area of fibrosis or a cavity.

Chief Signs.—See page 361.

Chronic Interstitial Pneumonia (Cirrhosis of the Lung).—*Characteristics.*—As in fibroid phthisis (see above).

Chief Signs.—See page 361.

Carcinoma of the Lungs.—*Characteristics.*—Ordinarily the breath sounds are absent, but if the new growth communicates with a large bronchus, bronchial breathing may be heard. It is also produced by a large compact infiltration.

Chief Signs.—See page 362.

Less Common Causes.—Bronchiectasis; pulmonary edema; pulmonary abscess (when of large size and superficial); pneumoconiosis; pulmonary gangrene (when extensive and near the surface); actinomycosis; pulmonary syphilis; chronic pulmonary congestion; mediastinal tumor; hydrothorax; hemothorax; chylothorax; pneumothorax; sarcoma of the lung; enlarged bronchial glands; subphrenic abscess.

CAVERNOUS AND AMPHORIC BREATHING

These are two subvarieties of bronchial respiration afforded by cavities. Cavernous breathing is distinguished by its deep and hollow quality and low pitch, and amphoric breathing by its characteristic musical, metallic, echoing quality. A minor subvariety, known as Seitz' metamorphosing respiration, is distinguished by an inspiratory murmur beginning as a tubular sound and ending as either a cavernous or an amphoric tone. This change of quality is afforded by a cavity having a small patent bronchial outlet.

Chronic Pulmonary Tuberculosis (Phthisis).—*Characteristics.*—These modifications of bronchial breathing are audible over an empty cavity of fair size, while over a small cavity the breathing is more likely to be purely tubular. Tuberculous cavities are usually found in the upper portion of the chest.

Chief Signs.—See page 412.

Bronchiectasis (Dilatation of the Bronchi).—*Characteristics.*—Cavernous or amphoric breath sounds are audible over an accessible empty bronchiectatic cavity, with moist cavernous râles and gurgles. These sounds disappear when the dilatation becomes filled with secretion or when the communicating bronchus becomes obstructed, to reappear when the cavity is emptied and the tube cleared, as by a paroxysm of coughing. Bronchiectatic cavities are usually found at the base.

Chief Signs.—See page 359.

Abscess of the Lung.—*Characteristics.*—Sounds are audible only when the cavity is of comparatively large size, empty, and superficially situated. The abscess is usually located in a lower lobe but may be anywhere.

Chief Signs.—See page 360.

Less Common Causes.—Chronic interstitial pneumonia; fibroid phthisis; pul-

monary syphilis; pulmonary gangrene (when the gangrenous area is extensive and near the surface); carcinoma of the lung (broken down); actinomyces; pneumothorax (distinctly amphoric or bronchial when a patch of compressed lung abuts against an open bronchial tube); acute bronchitis (if the bronchial caliber is decidedly narrowed); chronic bronchitis; fibrinous bronchitis; subphrenic gaseous abscess; pleurisy with effusion; empyema; lobar pneumonia.

PROLONGED HARSH EXPIRATION

This is physiologic over the upper part of the right lung.

Hypertrophic Emphysema.—*Characteristics.*—A low-pitched, notably prolonged, harsh and wheezy expiratory with an indistinct inspiratory murmur is distinctive. The duration of expiration equals or exceeds that of inspiration. These findings are audible over the greater part of both lungs.

Chief Signs.—See page 416.

Bronchial Asthma.—*Characteristics.*—During the attack inspiration is short and quick, expiration prolonged and dotted with râles. In chronic cases, in which emphysema has developed, there is, between attacks, the harsh, prolonged expiration of emphysema.

Chief Signs.—See page 391.

Chronic Pulmonary Tuberculosis (Phthisis).—*Characteristics.*—The expiratory murmur is rough, harsh, and prolonged over a patch of beginning infiltration; this is especially suggestive when occurring at the left apex.

Chief Signs.—See page 412.

Chronic Bronchitis.—*Characteristics.*—Auscultation reveals an undue expiration prolongation with a confusing commingling of normal, feeble, and harsh breathing, and various-sized dry and moist bronchial râles.

Chief Signs.—See page 359.

Less Common Causes.—Bronchiectasis; fibrinous bronchitis; acute pulmonary congestion; chronic pulmonary congestion.

PUERILE OR EXAGGERATED BREATHING

This type of respiration is physiologic in children below the age of puberty, being more pronounced the younger the child; in the healthy adult it is audible above and below the right clavicle, and frequently also at the left base posteriorly. A thin, elastic chest-wall magnifies the vesicular murmur, while a thick, rigid chest blocks the transmission of the sound. Puerile breathing differs from bronchovesicular in that puerile breathing is untainted by the bronchial tone and is not attended by any disturbance in the normal inspiratory-expiratory ratio.

Dyspnea.—*Characteristics.*—There is usually an abnormal intensity and harshness of the breath sounds.

For causes of Dyspnea, see page 391.

Compensatory Emphysema.—*Characteristics.*—A harsh, puerile respiratory murmur, with little or no prolongation of the expiratory phase, is noted over the vicariously overacting lung. This condition develops in consequence of crippling

of the opposite lung by a wide-spread congestion, fibrosis, infiltration, effusion, or neoplasm.

Chief Signs.—See page 376.

Less Common Causes.—Acute bronchitis; pleurisy with effusion (in the infraclavicular region); bronchopneumonia.

WEAK OR ABSENT BREATH SOUNDS

Enfeeblement of the vesicular murmur, or senile breathing, is common in the aged and in states of asthenia and debility. Normal lungs may emit suppressed, distant sounds simply because the subject breathes so quietly that the vesicles are improperly inflated in inspiration. Fat or edematous chest-walls conduct the breath sounds less intensely than thin ones.

Hypertrophic Emphysema.—*Characteristics.*—General enfeeblement of the respiratory murmur, with low-pitched and prolonged expiration and short, silent inspiration is distinctive.

Chief Signs.—"Barrel chest"; dyspnea; harsh, wheezy respirations with prolonged expiration; cyanosis; chronic bronchitis; diminished vocal fremitus; general pulmonary hyperresonance; feeble heart sounds; coarse râles and sibilant rhonchi.

Pleurisy with Effusion.—*Characteristics.*—Partial or complete suppression of the respiratory murmur is the rule below the upper limit of the effusion. In children this sometimes does not hold true.

Chief Signs.—May be friction rub and pain early in the course; displacement of the apex beat toward the opposite side; wooden dulness or flatness on percussion, absence of tactile fremitus, Grocco's paravertebral area of dulness, skodaic resonance above the limit of the effusion; aspiration (straw-colored serum); x-ray.

Empyema (Purulent Pleurisy).—*Characteristics.*—Enfeeblement is the rule, although at times the sounds may be increased and of a tubular quality.

Chief Signs.—May be pain in the side of the chest; slight cough; sweats and irregular fever; pallor and weakness, especially in a child; diminished excursion of the chest; heart and liver displacement; physical signs those of pleurisy with effusion; high leukocytosis; aspiration (pus).

Hydrothorax.—*Characteristics.*—As in pleurisy with effusion, though more commonly bilateral.

Chief Signs.—See page 423.

Acute Pneumothorax.—*Characteristics.*—The respiratory murmur is suppressed over the distended pleura, often to the point of absolute silence. The breathing, if heard at all, possesses a distant amphoric tone or a bronchial quality if the sound is transmitted by way of a patch of compressed lung adjoining an open bronchial tube. This suppression of breath sounds maintains when fluid or pus accumulates in the empty pleural sac.

Chief Signs.—Agonizing pain in the side; extreme dyspnea; collapse; small rapid pulse; immobility and enlargement of the affected side; displacement of the apex beat away from the affected side; absent tactile fremitus, tympany, metallic quality to vocal resonance; coin test; may be râles (metallic tinkling) and cough; later succussion splash and signs of shifting fluid; x-ray.

Pulmonary Edema.—*Characteristics.*—The breath sounds and the voice sounds are enfeebled, especially at the bases posteriorly.

Chief Signs.—Presence of cardiac, renal, or other cause; dyspnea; basal dullness; liquid râles; cough; abundant serous expectoration.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics.*—The respiratory murmur ordinarily is feeble and suppressed early during the stage of engorgement. It is also enfeebled in those forms of massive pneumonia in which a fibrinous exudate blocks a large part of the bronchial lumen.

Chief Signs.—See page 412.

Atelectasis (*Pulmonary Collapse*).—*Characteristics.*—The respiratory murmur is generally suppressed.

Chief Signs.—Presence of cause of lung compression or bronchial occlusion when large areas are affected; otherwise capillary bronchitis; may be dyspnea; may be diminished expansion; diminished vocal fremitus (may be exaggerated); dullness on percussion if large and superficial; may be signs suggestive of cavity if overlying a large bronchus.

Bronchial Stenosis.—*Characteristics.*—The respiratory murmur and vocal resonance are enfeebled or abolished over the lung beyond the site of the constriction of the bronchus.

Chief Signs.—Inspiratory dyspnea; paroxysmal cough; diminished tactile fremitus; loud sibilant and sonorous râles at the site of the constriction; presence of an etiological factor within or without the tube.

Foreign Body in the Air Passages.—*Characteristics.*—Over the lung beyond the obstruction the respiratory murmur is enfeebled or abolished. If the body lodges in the larynx or trachea the enfeeblement will be bilateral.

Chief Signs.—See page 393.

Chronic Adhesive Pleurisy.—*Characteristics.*—The respiratory murmur and vocal resonance are enfeebled, especially at the base, in proportion to the degree of pleural thickening, of respiratory restriction, and of vesicular obliteration.

Chief Signs.—History of previous lung disease; thoracic deformity and immobility; wooden flatness at one base; coarse friction murmur.

Mediastinal Tumor.—*Characteristics.*—Silence is noted over the dull region of the tumor; neither lung or heart sounds are transmitted. If hydrothorax develops the absence of sounds becomes more extensive.

Chief Signs.—See page 432.

Carcinoma of the Lungs or Pleura.—*Characteristics.*—A moderately disseminated growth will give suppressed breathing.

Chief Signs.—See page 425.

Less Common Causes.—Acute bronchitis (if the lumen of a tube is blocked by secretion); chronic bronchitis (due to emphysema); fibrinous bronchitis; acute and chronic pulmonary congestion; chronic interstitial pneumonia (at the bases); acute tuberculous pneumonia (in the early stages); chronic ulcerative tuberculosis (sometimes over a patch of beginning infiltration); fibroid phthisis (at the bases); hydatid cyst; acute fibrinous pleurisy (from restriction of breathing because of pain); pleurodynia (restriction of respiration from pain); diaphragmatic pleurisy (at the base); diaphragmatic hernia (from pneumothorax); trauma of the chest

(from restricted movements); sarcoma of the lung; subphrenic abscess (axillary region).

BRONCHOPHONY

(*Increased Vocal Resonance*)

The bronchial voice is an exaggeration of vocal resonance seemingly produced just below the chest-wall and similar to the normal resonance audible over the trachea and primary bronchi. Pectoriloquy is the transmission of articulate speech to the surface of the thorax, the syllables being clearly and distinctly audible; and whispering pectoriloquy is a similar conduction of the articulate whisper through the chest-wall. Egophony is bronchophony of a peculiar quavering nasal tone comparable to the bleating of a goat. Caverniloquy and amphoriloquy are modifications of bronchophony afforded by cavities.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics*.—Bronchophony and perhaps whispering pectoriloquy are heard over the consolidated lobe or lobes, and less commonly egophony. Whispering pectoriloquy is a more accurate index in delimiting the consolidated area than bronchophony. Usually bronchophony cannot be detected over a deep-seated central consolidation, nor is it audible if the bronchi be occluded as by a large fibrinous plug or by the generalized obstruction of a massive pneumonia.

Chief Signs.—See page 412.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics*.—Vocal resonance is increased over an infiltrated and excavated area of the lung, and of the latter, whispering pectoriloquy is one of the most constant physical signs, though it may be symptomatic of a dense peribronchial solidification. Clear pectoriloquy is very commonly heard in this condition when the stethoscope is applied to the tips of the upper thoracic vertebræ.

Chief Signs.—See page 412.

Pulmonary Infarction (*Pulmonary Embolism; Pulmonary Apoplexy*).—*Characteristics*.—Bronchophony is audible over a sharply defined area of dulness commonly situated posteriorly over a lower lobe, but may be dampened by the presence of flooded bronchi and masked by the crepitation of loud râles.

Chief Signs.—See page 413.

Bronchiectasis (*Dilatation of the Bronchi*).—*Characteristics*.—Over an accessible empty cavity, usually basal, bronchophony or even clean-cut whispering pectoriloquy may be heard. These signs disappear and reappear, however, with filling and emptying of the cavity. They disappear also if the communicating bronchus becomes obstructed.

Chief Signs.—See page 359.

Acute Pneumonic Phthisis (*Lobar Form*).—*Characteristics*.—Intense bronchophony develops as in lobar pneumonia, usually over an upper lobe.

Chief Signs.—See page 413.

Acute Tuberculous Bronchopneumonia ("Galloping Consumption").—*Characteristics*.—Bronchophony may be detected over scattered patches, usually in the apical region.

Chief Signs.—See page 413.

Fibroid Phthisis.—*Characteristics.*—Various degrees of bronchophony and even pectoriloquy are audible over an area of compact fibrosis or a cavity, more marked at the apices than at the bases.

Chief Signs.—See page 361.

Chronic Interstitial Pneumonia (*Cirrhosis of the Lung*).—*Characteristics.*—As in fibroid phthisis (see above).

Chief Signs.—See page 361.

Pleurisy with Effusion.—*Characteristics.*—Bronchophony, though distant, may sometimes be elicited below the level of the fluid, especially below the outer angle of the scapula. Egophony is rare but does occur. These signs are more common in children than in adults.

Chief Signs.—See page 416.

Bronchopneumonia.—*Characteristics.*—In the presence of considerable consolidation of the bases, bronchophony is occasionally to be elicited just above the level of the consolidation.

Chief Signs.—See page 413.

Tuberculous Adenitis (*Tracheobronchial*).—*Characteristics.*—The glandular masses may exaggerate the bronchial sounds, combining bronchophony and intensified breath sounds with sternal dullness.

Chief Signs.—See page 361.

Less Common Causes.—Atelectasis (over a dense peribronchial patch or a dense area of compression); pulmonary syphilis; pulmonary abscess; pulmonary gangrene; pneumoconiosis; pulmonary neoplasm (when infiltration by small tumor masses is extensive, or over a large compact infiltration adjacent to a bronchus); actinomycosis; empyema (in children); mediastinal tumor; pulmonary edema; aneurysm of the arch of the aorta (compression atelectasis).

RALES

Râles may be divided for practical purposes into dry and moist. The first are dry, snoring, whistling, or musical sounds of variable pitch, intensity, and quality arising within the bronchi and larger air passages as the result of constriction of their lumen. Sibilant râles are dry râles distinguished by a shrill high-pitched quality or by a soft cooing tone, and are produced within the smaller bronchi. Sonorous râles are coarse, loud, low-pitched snoring sounds arising within the large and medium-sized tubes. Moist râles are the various moist, crackling, bubbling, or gurgling sounds produced in the air tubes and pulmonary parenchyma by the movement of air through collections of fluid or by the separation of agglutinated vesicular and infundibular walls. They are classified as crepitant, subcrepitant, or mucous. Crepitant râles are delicate crackling sounds due to separation of the alveolar walls on inspiration. Subcrepitant râles are moist bronchial sounds audible during both inspiration and expiration, and are coarser than crepitant râles. Mucous râles are large, medium-sized, or small bubbling and explosive sounds arising in the bronchi containing fluid.

Acute Bronchitis.—*Characteristics.*—In the early stage there are low-pitched sonorous and piping sibilant râles everywhere, appearing and disappearing with

cough and forcible breathing. Later mucous and bubbling râles become audible also.

Chief Signs.—See page 357.

Chronic Bronchitis.—*Characteristics.*—During the active stage the lungs are usually filled with mixed râles, both large and small, and at one time or another they are heard everywhere throughout both lungs; crepitant râles at the bases may be detected should there be patches of collapsed lung there.

Chief Signs.—See page 359.

Chronic Pulmonary Tuberculosis (Phthisis).—*Characteristics.*—In the incipient stage persistent subcrepitant or crepitant râles are heard on deep inspiration or coughing, at one apex. Should the bronchiolar mucosa be dry and swollen, piping sibilant râles are found rather than moist sounds, though the two are often intermingled. In some instances a single sharp mucous click is the first evidence of tuberculous bronchitis. Râles which are brought out by coughing, which persist, and which are repeatedly heard at the same spot, are of the greatest importance in early diagnosis. As softening progresses and secretion accumulates within the larger bronchi, coarse mucous râles become audible, and should dry bronchitis coexist in other parts of the tubes, snoring rhonchi are also heard. Over a cavity containing liquid there are various-sized moist bubbling and gurgling sounds of cavernous or amphoric quality. To cavernous râles, deep and active inspiration may add a sharp, clean-cut quality, when they are described as consonating, resonant, or metallic râles. As the disease extends downward from one apex, râles may be heard at the other as it becomes affected.

Chief Signs.—See page 412.

Lobar Pneumonia (Croupous Pneumonia).—*Characteristics.*—Fine crepitant râles are audible very early in the disease, at the end of inspiration as a series of minute cracklings, heard close to the ear, when a full-breath is drawn. During the stage of red hepatization crepitant râles are usually not present, though consonating râles are often a prominent associated sign. Crepitant râles in showers are heard first in resolution, later replaced by loud moist râles (râles redux). In children crepitations are difficult to appreciate.

Chief Signs.—See page 412.

Bronchopneumonia.—*Characteristics.*—Subcrepitant râles at both bases, often associated with dry and piping sibilant sounds, are the most typical auscultatory findings of the disease. Finer vesicular crepitations are also detected, so long as the lobular consolidation is not complete, and in many instances there are numerous dry and moist râles of a concomitant bronchitis or the larger tubes.

Chief Signs.—See page 413.

Influenza (La Grippe).—*Characteristics.*—There are numerous râles of bronchitis, which may be fairly generally distributed but are commonly limited to the bases of the lungs posteriorly. They may be subcrepitant in character, but commonly, large mucous râles are also present.

Chief Signs.—See page 357.

Hypertrophic Emphysema.—*Characteristics.*—If bronchitis or asthma coexist with the emphysema, expiration, which is prolonged, is wheezy, harsh, and more or less masked by coarse and sibilant râles. Crepitation may sometimes be heard at the apex on forced inspiration.

Chief Signs.—See page 414

Bronchial Asthma.—*Characteristics.*—During the height of the attack the vesicular murmur is usually inaudible, and instead a to-and-fro wheezing sound is heard. As the attack begins to subside, innumerable râles are heard throughout the chest. At first the râles are sibilant and sonorous in character and may be both low- and high-pitched. Later, fine moist crepitant and subcrepitant râles are heard, especially over the lower portions of the lungs.

Chief Signs.—See page 391.

Pulmonary Edema.—*Characteristics.*—Numerous fine moist râles of a distinctive liquid quality are first heard over the dependent parts of the lungs; as the edema spreads they are diffused throughout the lungs. Later these fine râles are masked by coarse bubbling sounds when the larger bronchi are filled with transudate.

Chief Signs.—See page 417.

Pulmonary Infarction (*Pulmonary Embolism; Pulmonary Apoplexy*).—*Characteristics.*—Numerous crepitant and subcrepitant râles may be heard over a sharply circumscribed area, commonly posteriorly over a lower lobe.

Chief Signs.—See page 413.

Chronic Passive Congestion of the Lung.—*Characteristics.*—Liquid râles can be detected over the bases, especially in cases of hypostatic congestion of asthenic, bedridden patients.

Chief Signs.—See page 404.

Bronchiectasis (*Dilatation of the Bronchi*).—*Characteristics.*—Râles of every description may be heard. When coarse and metallic in quality they are strongly suggestive of cavity formation or bronchial dilatation.

Chief Signs.—See page 359.

Abscess of the Lung.—*Characteristics.*—In the absence of cavity, there may be fine crepitant râles; with cavitation, coarse bubbling râles or consonating râles may be audible.

Chief Signs.—See page 360.

Acute Pneumothorax.—*Characteristics.*—A medley of bubbling râles of ringing metallic quality are developed by the acts of coughing and deep respiration over the upper part of the chest, especially in tuberculous cases, if the lung is not completely collapsed.

Chief Signs.—See page 416.

Foreign Body in the Air Passages.—*Characteristics.*—Very fine crackling râles may be present, softer than those of lobar pneumonia and similar to the crepitations made by very fine tissue paper. They are heard only in the cases in which the foreign body is metallic.

Chief Signs.—See page 393.

Bronchial Stenosis.—*Characteristics.*—Loud sibilant and sonorous râles and numerous mucous sounds generated in the bronchial exudate are audible at the site of the constriction.

Chief Signs.—See page 417.

Atelectasis (*Pulmonary Collapse*).—*Characteristics.*—If air enters, a few crepitant and subcrepitant râles are audible toward the end of deep inspiration.

Chief Signs.—See page 417.

Acute Miliary Tuberculosis of the Lungs.—*Characteristics.*—There are

usually numerous râles over the lungs, which in the beginning are intense and crackling in character, but which later become large, mucous and sibilant.

Chief Signs.—See page 392.

Acute Bronchopneumonic Tuberculosis (*"Galloping Consumption"*).—*Characteristics.*—At the beginning, râles such as occur in acute bronchitis occur over one or both lungs. Later, as patches of infiltration develop, mixed râles are heard, especially the fine crackling variety after coughing, and usually in the apical and axillary regions.

Chief Signs.—See page 413.

Acute Pneumonic Phthisis (*Lobar Form*).—*Characteristics.*—Fine crackling râles are heard as in lobar pneumonia. Later as the apical lung tissue breaks down, large moist râles are audible.

Chief Signs.—See page 413.

Pneumonoconiosis.—*Characteristics.*—As the exposure to the dust becomes prolonged, râles, both large and small, may be heard in both lungs. When fibrosis becomes marked, fine crackling râles are present at the points of fibrosis.

Chief Signs.—See page 362.

Less Common Causes.—Fibrinous bronchitis (a peculiar dry "bruit de drapau"); chronic interstitial pneumonia; fibroid phthisis; pulmonary syphilis; multiple abscesses of the lung; pulmonary gangrene; interlobar empyema; encapsulated empyema; pulmonary neoplasm (when there is coexistent bronchitis, congestion, or edema); actinomycosis of the lung; hydatid cyst of the lung (when empty); chronic mediastinitis; chronic adhesive pleurisy; mediastinal tumor; typhoid fever; measles; iodism; rickets; whooping-cough; smallpox; aneurysm (pressing on a bronchus); coronary thrombosis.

PLEURAL FRICTION SOUND

This sound varies according to the degree and extent of the lesion, from that of a delicate crepitation to one resembling a silken rustle or at times to that of a loud rasping rub. It is superficial, circumscribed, intensified by pressure of the stethoscope, uninfluenced by the act of coughing, and audible during both inspiration and expiration, though it is more likely to be interrupted than continuous. It is generally more distinct in the lower axillary region on the affected side and just below the scapular angle. A pleuropericardial friction, most commonly about the left border of the precordia, causes a rub which is synchronous with the movement of the heart and related also to respiratory phases (see "Friction Sound over the Precordia," page 434).

Acute Pleurisy.—*Characteristics.*—Friction sounds are audible over the site of the lesion during the first few days of the disease, after which they subside. The friction is usually most distinct during inspiration and resembles vesicular crepitations. During the first stage of pleurisy with effusion a friction sound is heard which is of greater intensity and wider distribution. This disappears with the accumulation of fluid, to reappear after absorption and possibly to acquire later a coarse creaking quality.

Chief Signs.—See page 369.

Chronic Adhesive Pleurisy.—*Characteristics.*—Friction sounds are sometimes audible. They are loud, leathery, and creaking in character.

Chief Signs.—See page 417.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—Pleuritic friction sounds are frequently heard during the stage of moderately advanced involvement. It is often difficult to distinguish between crepitating râles in the lung and fine pleural crepitations. The friction rub may occur on the affected side or it may be heard on the opposite side. At times these fine crepitations may be heard over both the upper and the lower portion of one lung.

Chief Signs.—See page 412.

Pulmonary Infarction (*Pulmonary Embolism; Pulmonary Apoplexy*).—*Characteristics.*—The most important sign is a friction rub which is usually heard on the second or third day and persists for about a week.

Chief Signs.—See page 413.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics.*—While crepitant râles are usually inaudible during the stage of red hepatization, pleural friction sounds are not infrequently heard at this time, as well as at the other stages of the disease.

Chief Signs.—See page 412.

Less Common Causes.—Acute miliary tuberculosis (tubercles beneath the pleura may give a soft delicate crepitation); diaphragmatic pleurisy (exceptionally dry friction rubs may be audible in the region of the diaphragm); hepatic abscess; subphrenic abscess (at the xyphoid cartilage); cancer of the liver; perihepatitis (over the lower right thorax); perisplenitis; enlarged bronchial glands; fractured rib; interstitial emphysema (from trauma of the lung); acute mediastinitis; mediastinal tumor; cancer of the pleura; Asiatic cholera (inspissation of the pleura).

SUCCUSSION SOUND

On auscultation of the chest, the patient's body being shaken, a splashing sound is heard, which may be audible at a distance (so-called hippocratic succussion splash). The sound has a metallic ringing quality.

Hydropneumothorax.—*Characteristics.*—The succussion splash is considered pathognomonic of this condition.

Chief Signs.—Those of pneumothorax plus movable fluid.

Less Common Causes.—Diaphragmatic hernia (with the stomach in the thorax); chronic pulmonary tuberculosis (large thin-walled cavity); abscess of the lung; pyopneumothorax; gangrene of the lung; hydropneumopericardium; gas-tropleural fistula.

SEROUS EFFUSION IN THE PLEURAL CAVITY (ASPIRATION)

When signs of fluid in the pleural cavity exist, exploratory aspiration is indicated, as the presence of fluid and its character are of great importance in diagnosis, treatment, and prognosis. A pleuritic must be distinguished from a pleural effusion, an exudative process from a transudate. Flatness, diminished tactile fremitus,

and diminished or absent breath sounds are the main physical signs in all cases. The fluid of exudation is straw-colored, of a specific gravity of about 1.020, contains flocculi of fibrin, together with numerous desquamated endothelial cells, pus cells, bacteria, and blood-cells. A transudate is clear and of slightly yellowish hue, with a specific gravity of 1.010 to 1.013, and is devoid of fibrin. Upon standing a slight sediment of flat, desquamated endothelial cells is demonstrable microscopically.

Pleurisy with Effusion.—*Characteristics.*—Serous effusion (exudative) is present. The diagnosis would not be complete without the determination of the causative lesion and organism.

Chief Signs.—See page 416.

Chronic Pulmonary Tuberculosis (Phthisis).—*Characteristics.*—A unilateral pleural effusion (exudate) may be present before definite lung signs are elicited. A pleural effusion is suspicious in every case.

Chief Signs.—Cough; signs of apical disease; evening pyrexia; night sweats; permanent coarse apical râles; tubercle bacilli in the sputum; inoculation of pleural fluid in a guinea-pig (should always be done); x-ray.

Acute Rheumatic Fever.—*Characteristics.*—Pleurisy with effusion (exudative) is often present. Other symptoms may be present and definite, or the pleural effusion may be the main symptom.

Chief Signs.—See page 295.

Lobar Pneumonia (Croupous Pneumonia).—*Characteristics.*—A pleural effusion (exudative) of some amount (small or large) is always present, usually unilateral. Pneumococcic pleuritic effusion sometimes occurs without definite lobar pneumonia preceding it.

Chief Signs.—See page 412.

Cardiorenal Disease.—*Characteristics.*—A passive unilateral or bilateral serous effusion (transudate) may occur from heart-failure or simple edema with or without anasarca. A unilateral pleurisy (exudate) may occur as the result of intercurrent infection. Where the chronic heart disease is the main factor, right-sided hydrothorax may occur, preceding the general edema. Where nephritis is the main factor, the hydrothorax may be bilateral, but usually even then predominates on the right side.

Chief Signs.—Dyspnea; edema; cough; signs of dilated heart; accentuation of the aortic second sound; hypertension; albuminuria with renal tube casts; oliguria.

Bronchopneumonia.—*Characteristics.*—A pleural effusion is often present but may be small in amount, usually unilateral.

Chief Signs.—See page 413.

Mediastinal Tumor.—*Characteristics.*—A pleural effusion (transudate) is often present, usually unilateral, sometimes bilateral. The fluid quickly recurs after tapping and may be blood-tinged or contain particles of new growth (detected microscopically after centrifugalization).

Chief Signs.—See page 432.

Carcinoma of the Lungs or Pleura.—*Characteristics.*—Same as above

Chief Signs.—See page 425.

Less Common Causes.—Influenza; aneurysm of the arch of the aorta; Hodgkin's disease; leukemia; splenic anemia; pseudoleukemia infantum; pernicious

anemia; appendicitis (from extension of the inflammation through the diaphragm); acute peritonitis (of whatever cause); pelvic peritonitis (of whatever cause); infarction of the lung (thrombotic or embolic, when extensive); multiple serositis (polyorrhomenitis); portal cirrhosis of the liver (right-sided hydrothorax); cirrhosis of the lung ("hydrops ex vacuo"); hydatids of the lung; sarcoma of the lungs.

BLOODY EFFUSION IN THE PLEURAL CAVITY (ASPIRATION) AND HEMOTHORAX

Care must be taken to exclude the possibility of hemorrhage due to puncture of a vessel by the aspiration needle. In this case the blood usually appears at once and fades out as more fluid is withdrawn, or it may occur at a second tapping from previous injury to the lung or the separation of new adhesions. Penetrating wounds of the chest-wall may obviously cause hemorrhage into the pleural cavity if a vessel is ruptured.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics*.—Blood-stained effusions are very suggestive of tuberculosis.

Chief Signs.—See page 424.

Carcinoma of the Lungs or Pleura.—*Characteristics*.—On tapping, the effusion is usually bloody but may at first be clear; there may be fragments of new growth in the centrifugalized deposit.

Chief Signs.—May be little or no cough and very slight dyspnea; progressive emaciation, weakness, anemia; subcutaneous nodules along the ribs; involvement of the cervical and axillary glands; dulness and absent breath sounds; x-ray.

Chronic Myeloid Leukemia.—*Characteristics*.—There may be a hemorrhagic exudate into the pleura as a part of the general hemorrhagic tendency.

Chief Signs.—See page 395.

Acute Serofibrinous Pleurisy.—*Characteristics*.—A most intense pleurisy occasionally is accompanied by blood-tinged fluid, pink, red, or brown, when many erythrocytes are present. Such color change is not appreciable until the erythrocytes number more than 6,000 to the c. mm. The fluid will be of high specific gravity, contain much albumin, coagulate spontaneously, and show microscopically numerous cells, both white and red.

Chief Signs.—See page 369.

Less Common Causes.—Chronic nephritis; purpura; scurvy; hemophilia (from trauma); aneurysm of the thoracic aorta (rupturing into the pleural cavity); mediastinal tumor; influenza; acute infectious fevers; caries of the ribs (causing erosion of an intercostal artery); sarcoma of the lungs.

PURULENT EFFUSION IN THE PLEURAL CAVITY (ASPIRATION)

If aspiration of the thorax brings pus it must be remembered that, while the pus most frequently comes from the pleural cavity, the needle may have penetrated an abscess cavity of the lung substance or drained a subdiaphragmatic abscess or even an hepatic abscess which has ruptured into the pleural cavity.

Empyema (*Purulent Pleurisy*).—*Characteristics*.—The character of the effu-

sion is exceedingly variable, ranging from a thin, moderately opaque, seropurulent liquid of yellowish-green hue, to a thick, creamy, yellow pus.

Chief Signs.—Slight cough; sweats and irregular fever; may be pain in the chest; pallor and weakness, especially in a child; diminished excursion of the chest; heart and liver displacement; physical signs those of pleurisy with effusion; high leukocytosis; aspiration (pus).

Less Common Causes.—Gangrene of the lung (putrid material); hydatids with suppuration (hooklets); actinomycosis (greenish with yellow, seedlike bodies); pyopneumothorax.

DISPLACED APEX BEAT

In the healthy adult the apex beat is recognized by a rhythmic local pulsation in the fifth left interspace, three and one-half inches (8.75 cm.) external to the midsternal line. In young children it is commonly observed in the fourth interspace and as far outward as the midclavicular line; in short-chested subjects it may be similarly elevated; and in persons of advanced age and those having a long chest it may beat at an abnormally low level. Usually the apex beat can be both seen and felt. Deep inspiration slightly depresses, and forced expiration elevates the site of the apex, which also shifts horizontally when the subject turns from the dorsal to the lateral decubitus, the deflection amounting to an inch or two toward the left when the left lateral position is assumed.

Upward displacement may indicate unduly great subphrenic pressure, in consequence of which the diaphragm, and with it the heart, rises to a higher level, as in ascites, meteorism, gastric distention, and large abdominal tumors. In such cases the cause of the displacement is obvious but does not preclude a search for other factors.

Cardiac Hypertrophy.—*Characteristics.*—When the left ventricle is predominately hypertrophied the apex beat is violent and extensive and is displaced toward the left and downward, not infrequently occupying the seventh or eighth interspace external to the midclavicular line. If the right ventricle is mainly affected, the apex beat is diffused and displaced horizontally toward the left with little or no depression. A systolic pulsation is also present in the epigastrium and at the left sternal borders.

For causes of Cardiac Hypertrophy, see page 437.

Cardiac Dilatation.—*Characteristics.*—The apex beat is displaced, especially in left ventricular dilatation, downward and to the left, and the precordial impulse is feeble and wavy.

Chief Signs.—See page 435.

Pleurisy with Effusion.—*Characteristics.*—In right-sided effusion the apex may be lifted to the fourth interspace or pushed beyond the left nipple line even to the axilla. With left-sided effusion the impulse may not be visible, being covered by the sternum, or it may be pushed over to the right of the sternum in the third or fourth interspace, sometimes almost to the axilla.

Chief Signs.—See page 431.

Hypertrophic Emphysema.—*Characteristics.*—The apex beat may be displaced downward, partially as a result of pressure exerted upon the heart by the

voluminous anterior borders of the lungs, and partially as a result of the inspiratory position of the thorax, in which the ribs tend to move upward over the heart. Hypertrophy of the right ventricle may cause displacement to the left.

Chief Signs.—See page 416.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—The cardiac impulse is crowded below and outside its normal site and may beat tumultuously owing to concomitant hypertrophy.

Chief Signs.—See page 430.

Chronic Adhesive Pleurisy.—*Characteristics.*—The heart may be drawn to the right or to the left according to whether the traction is exerted by right- or left-sided adhesions.

Chief Signs.—See page 417.

Fibroid Phthisis.—*Characteristics.*—The heart is greatly displaced, being drawn over by shrinkage of the lung to the affected side. When the left lung is affected there may be a large area of visible pulsation in the third and fourth interspaces along the left sternal border.

Chief Signs.—See page 431.

Chronic Interstitial Pneumonia (Cirrhosis of the Lung).—*Characteristics.*—As in fibroid phthisis (see above).

Chief Signs.—See page 361.

Chronic Pulmonary Tuberculosis (Phthisis).—*Characteristics.*—In the advanced stage of the disease more or less displacement of the heart is extremely common. The organ is pushed over toward the diseased side by the vicariously hypertrophied lung and drawn toward it by adhesions. When the heart is drawn toward the left it is apt to be pulled upward toward the axilla. At times the right-sided displacement may be so marked as to constitute a dextrocardia.

Chief Signs.—See page 412.

Acute Pneumothorax.—*Characteristics.*—The visible cardiac impulse is displaced toward the sound pleura.

Chief Signs.—See page 416.

Mediastinal Tumor.—*Characteristics.*—When encroached upon by a tumor of the posterior mediastinum, the heart appears to be thrust forward en masse with every systole so that the cardiac impulse covers the whole of the precordium. In other cases the apex beat may merely be tilted outward and downward by the pressure of a tumor upon the base of the heart.

Chief Signs.—See page 432.

Pericarditis with Effusion.—*Characteristics.*—The position of the apex beat is not constant; if not wholly obscured by the effusion it is visibly enfeebled and displaced from its normal position usually an interspace or two upward, though sometimes when the effusion is very copious it is displaced downward.

Chief Signs.—See page 362.

Chronic Adhesive Pericarditis.—*Characteristics.*—There is fixation of the apex beat rather than displacement, when there are extensive adhesions. Change of position of the body fails to move the apex beat.

Chief Signs.—See page 438.

Scoliosis.—*Characteristics.*—In cases of marked deformity the apex beat is displaced toward the side of the dorsal spinal convexity.

For causes of Scoliosis, see page 551.

Diaphragmatic Hernia.—*Characteristics.*—The cardiac impulse is displaced to the right (the hernia most always being on the left) due to the left pneumothorax and to the pressure of abdominal viscera contained in the thorax.

Chief Signs.—See page 528.

Transposition of Viscera.—*Characteristics.*—The heart is found on the right side (dextrocardia) with otherwise normal thoracic findings. The abdominal viscera may be likewise transposed. The apex beat is to be looked for in the fifth right interspace near the midclavicular line.

Less Common Causes.—Eventration of the diaphragm (upward displacement of the apex); paralysis of the diaphragm (upward displacement of the apex); enlarged liver (displacement to the left or downward); visceroptosis; chlorosis (upward displacement of the apex); atrophy of the heart (upward displacement); tumor of the right lung (displacement to the left); aneurysm of the heart; compensatory emphysema (displacement to the right when involving the left lung sufficiently); hydrothorax (as in pleurisy with effusion when unilateral); hemothorax; chylothorax.

FORCIBLE APEX BEAT

Exercise and emotional excitement cause exaggeration of the apex beat, as also the overuse of tobacco, coffee, tea, and alcohol. Indigestion affects the heart in the same manner. In the anemic and neurotic cardiac overaction is noted. Febrile diseases are accompanied by a somewhat exaggerated and accelerated impulse in the earlier stages. A strong impulse does not necessarily mean, however, strong ventricular contraction.

Cardiac Hypertrophy.—*Characteristics.*—The cardiac impulse is seen as a definite heave, somewhat diffuse, and displaced outward and downward. Palpation reveals increased force and lifting power.

For causes of Cardiac Hypertrophy, see page 437.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics.*—The apex beat may be heaving and forcible and the shock of the heart is easily felt in a well-developed case.

Chief Signs.—See page 450.

Fibroid Phthisis.—*Characteristics.*—An apparently exaggerated apex beat may be due to retraction of the left lung, whereby the heart is uncovered and hence pulsates against the chest-wall more forcibly and more extensively than in health.

Chief Signs.—See page 431.

Chronic Interstitial Pneumonia (*Cirrhosis of the Lungs*).—*Characteristics.*—As in fibroid phthisis (see above).

Chief Signs.—See page 361.

Effort Syndrome (*Neurocirculatory Asthenia; Soldier's Heart*).—*Characteristics.*—The apex beat is forcible and jerky.

Chief Signs.—See page 444.

Less Common Causes.—Acute endocarditis; aneurysm of the descending aorta; mediastinal tumor (pressing the heart forward against the chest-wall); acute myocarditis; apoplexy; orthostatic albuminuria.

FEEBLE OR ABSENT APEX BEAT

The apex beat is sometimes impalpable in health. Systemic shock and debility materially lessen the force of the apex beat. In obesity the chest-wall may be so thick as to obscure the apex beat; the same may hold true in thick muscular subjects and in edema of the thorax. The use of cardiac depressants will cause enfeeblement of the heart's action.

Cardiac Dilatation.—*Characteristics.*—The cardiac impulse is either quite obliterated, or feeble, diffuse, undulatory, and of a distinctly “slapping” character. It may be neither visible nor palpable, or it may be visible and quite impalpable. If the right ventricle is dilated there is pulsation below and on either side of the ensiform cartilage, outside the right sternal border between the fourth and seventh costal cartilages, and close to the left sternal margin between the second and fifth cartilages.

Chief Signs.—See page 435.

Hypertrophic Emphysema.—*Characteristics.*—The true apex beat is often obscured by the covering of the heart by the emphysematous lung; epigastric pulsations are common.

Chief Signs.—See page 416.

Myocarditis (Advanced).—*Characteristics.*—There is a feeble cardiac impulse associated with a feeble irregular pulse.

Chief Signs.—See page 449.

Acute Myocarditis.—*Characteristics.*—Enfeeblement of the cardiac impulse is accompanied by a forceless, empty and often arrhythmic pulse beat.

Chief Signs.—See page 453.

Pleurisy with Effusion.—*Characteristics.*—The apex beat is obscured when a left-sided effusion pushes the heart beneath the sternum.

Chief Signs.—See page 431.

Pericarditis with Effusion.—*Characteristics.*—A wavy impulse may be seen in the third or fourth interspace, but if the effusion is large no impulse may be visible.

Chief Signs.—See page 362.

Aortic Stenosis.—*Characteristics.*—The slow deliberate systole of the left ventricle may be so forceless as to give rise to no appreciable impulse in the region of the apex.

Chief Signs.—See page 454.

Less Common Causes.—Aneurysm of the heart; atrophy of the heart; fibroid phthisis (with contraction of the right lung which pulls the apex beneath the sternum); mediastinopericarditis; tumor of the anterior mediastinum (pushing the heart back); pneumothorax.

DIFFUSE APEX BEAT

Cardiac Dilatation.—*Characteristics.*—The cardiac impulse, if visible or palpable, is diffuse, feeble, and undulatory. If the right ventricle is greatly dilated there is pulsation below and on either side of the ensiform cartilage, outside the

right sternal border between the fourth and seventh cartilages, and close to the left sternal margin between the second and fifth cartilages.

Chief Signs.—See page 435.

Cardiac Hypertrophy.—*Characteristics.*—If left ventricular hypertrophy predominates the apex beat is violent and unnaturally extensive, and is visibly displaced toward the left and downwards. When the right ventricle is greatly enlarged the apex beat is diffused, displaced to the left, and there is marked epigastric pulsation.

For causes of Cardiac Hypertrophy, see page 437.

Fibroid Phthisis.—*Characteristics.*—In left-sided disease there is frequently a wide impulse in the third and fourth interspaces.

Chief Signs.—See page 431.

Chronic Interstitial Pneumonia (Cirrhosis of the Lung).—*Characteristics.*—As in fibroid phthisis (see above).

Chief Signs.—See page 361.

Mediastinal Tumor.—*Characteristics.*—In tumors of the posterior mediastinum considerable significance attaches to the sign noted by Graham Steele, who observed that the visible and palpable cardiac impulse covers an area almost coextensive with that of the entire heart, the latter appearing to be thrust forward en masse with every systole.

Chief Signs.—See page 432.

Effort Syndrome (Neurocirculatory Asthenia; Soldier's Heart).—*Characteristics.*—The apex beat is diffuse, forcible, and jerky.

Chief Signs.—See page 444.

Less Common Causes.—Chronic adhesive pericarditis (undulations from the third space to the apex); pericarditis with effusion; aneurysm of the descending aorta.

ABNORMAL PULSATIONS IN OR NEAR THE PRECORDIA

(See also "Displaced Apex Beat," page 426.)

Cardiac Dilatation.—*Characteristics.*—When the right ventricle is dilated greatly, there is an undulatory pulsation below and on either side of the ensiform cartilage, outside the right sternal border between the fourth and seventh costal cartilages, and close to the left sternal margin between the second and fifth cartilages. If the conus arteriosus alone is dilated the pulsation is present in the second left space; while a dilated right auricle causes pulsation in the third, fourth, and fifth right spaces.

Chief Signs.—See page 435.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—An aneurysm is frequently attended by a systolic throbbing on palpation in the first or second right interspaces near the sternal border (ascending arch); over the angle of Louis at the level of the second rib (transverse arch); in the second or third left interspaces (descending arch). There is often in these sites a shock which is circumscribed and attended by bulging of the chest-wall and expansile pulsation.

Chief Signs.—May be history of syphilis; pain (mild to anginoid); brassy cough, often paroxysmal; hoarseness or aphonia; may be slight hemoptysis; dyspnea, often paroxysmal; may be dysphagia; may be edema; inequality of the pupils; in-

equality of the pulses; tracheal tugging; dilated veins; increased area of dullness; diastolic shock and sound over the sac; systolic thrill and murmur over the sac; x-ray (expansile tumor).

Pleurisy with Effusion.—*Characteristics.*—In a left-sided effusion the cardiac impulse may be visible in the epigastrium or to the right of the sternum in the second to the fourth interspaces, sometimes as far outward as the neighborhood of the right midclavicular line.

Chief Signs.—May be friction rub and pain early in the course; displacement of the apex beat toward the opposite side; weak or absent breath sounds below the upper limit of the effusion; wooden dullness or flatness on percussion; absence of tactile fremitus, Grocco's paravertebral area of dullness, skodaic resonance above the limit of the effusion; aspiration (straw-colored serum); x-ray.

Chronic Pulmonary Tuberculosis (Phthisis).—*Characteristics.*—A wide area of impulse, particularly in the second, third, and fourth left interspaces, often results from extensive disease of the left apex.

Chief Signs.—See page 412.

Exophthalmic Goiter (Graves' Disease).—*Characteristics.*—In a well-developed case the visible area of cardiac pulsation is much increased, the action is heaving and forcible, and the shock of the heart sounds is well felt.

Chief Signs.—See page 450.

Mitral Stenosis.—*Characteristics.*—In children the precordia may bulge forward and marked pulsation may be seen in the interspaces to the left of the sternum.

Chief Signs.—See page 433.

Dilatation of the Aorta.—*Characteristics.*—There is often a palpable impulse detectable in the suprasternal notch or a systolic pulsation in the second and third interspaces to the right of the sternum or over the manubrium.

Chief Signs.—Evidence of arteriosclerosis or syphilis; absence of the signs of true aneurysm; aortic systolic murmur propagated into the neck; systolic basic thrill; dullness over the aortic arch; good volume pulse; accentuation of the aortic second sound; may be signs of aortic regurgitation and cardiac hypertrophy; x-ray.

Acute Aortitis.—*Characteristics.*—While pulsation in the suprasternal notch is more striking, it should be looked for also in the first and second right and left interspaces, especially in the second right interspace.

Chief Signs.—Presence or history of acute infectious disease, syphilis, or chronic aortitis; attacks of dyspnea and a sense of oppression in the chest; substernal pain; fever; throbbing carotids with upward displacement of the subclavian arteries and aorta; dullness on the right of the manubrium; "clanging" aortic second sound; may be systolic or diastolic aortic murmur.

Acute Pneumothorax.—*Characteristics.*—There may be pulsation to the right of the sternum in the second to the fourth interspaces in cases of extensive pneumothorax on the left side, which displaces the heart to the right.

Chief Signs.—See page 416.

Fibroid Phthisis.—*Characteristics.*—If the left lung is involved there may be an unusually large area of cardiac pulsation in the second, third, and fourth left interspaces due to displacement of the heart by the shrunken lung; if the right

lung is fibrotic there may be a similar pulsation between the second and fourth interspaces between the right sternal and midclavicular lines.

Chief Signs.—Chronicity; may be bronchiectasis; cough; hemoptysis; dyspnea on exertion; affected side immobile, retracted, shrunk; physical signs of consolidation or cavitation (wooden resonance and hyperresonance, bronchophony, bronchial and amphoric breathing, apical râles); cardiac displacement toward the affected side; tubercle bacilli in the sputum; x-ray.

Chronic Interstitial Pneumonia (*Cirrhosis of the Lung*).—*Characteristics.*—As in fibroid phthisis (see above).

Chief Signs.—See page 361.

Scoliosis.—*Characteristics.*—The heart may be greatly dislocated and with it the aorta, which may pulsate forcibly to the right of the sternum and simulate an aneurysm.

For causes of Scoliosis, see page 551.

Mediastinal Tumor.—*Characteristics.*—If a solid tumor erodes and perforates the sternum the projecting tumor may pulsate and the heart may be dislocated and its impulse much out of place. The pulsation of the tumor rarely has the forcible heaving impulse of an aneurysmal sac. A tumor of the posterior mediastinum may push the heart against the chest-wall, so that the cardiac impulse may cover the whole precordia.

Chief Signs.—May be cough; dyspnea; pressure symptoms (dysphagia, stridor, dilated veins of the neck and thorax); cyanosis of the upper parts of the body; physical signs (substernal dullness; absent vocal resonance; effusion); history of growth elsewhere; x-ray.

Pulsating Empyema.—*Characteristics.*—In a certain proportion of cases there is noted a systolic pulsation over the area overlying the empyema (all of one side). In empyema necessitatis there is an external pulsating tumor on the anterior or lateral chest-wall, somewhere between the third and sixth interspaces between the left border of the precordia and the axilla.

Chief Signs.—Slight cough; sweats and irregular fever; may be pain in the chest; pallor and weakness, especially in a child; diminished excursion of the chest; heart and liver displacement; physical signs those of pleurisy with effusion; high leukocytosis; aspiration (pus).

Less Common Causes.—Tumor of the lung (left side); cancer of the pleura; cardiac aneurysm; mediastinal abscess (above or at the side of the sternum); leukemia (aortic dilatation in late stages); acute fibrinous pericarditis (second left interspace near the sternum, early); pulsating pulmonary artery (second and third left spaces near the sternum).

THRILLS IN THE PRECORDIA

(See also "Pleural Friction Fremitus," page 404; and "Friction Fremitus over the Precordia," page 434.)

A thrill is the tactile equivalent of a murmur, and like it has a point of maximum intensity and a definite incidence in relation to the cardiac cycle. It is a fine or coarse vibration resembling the purr of a cat when the hand is placed upon its throat.

Mitral Stenosis.—*Characteristics.*—A presystolic apical thrill is practically pathognomonic. If the hand is placed over the precordia slightly above and to the right of the apex beat, there is imparted to it a fine vibration which occurs during all or a portion of systole and terminates in the abrupt, sharp shock of the first sound. The thrill may not be present constantly in the same case. In some instances it is felt best during expiration, in others it may be brought out by slight exertion, while in still others it may be detected by altering the posture of the patient. The thrill may precede the appearance of the presystolic murmur by several years. In the later stages of the disease, when compensation becomes broken, the thrill usually disappears.

Chief Signs.—Occurrence in adolescence or early adult life; rheumatic history (a year or more previous); presystolic crescendo apical murmur ending in a sharp first sound; reduplication of the second sound at the apex; accentuated and often reduplicated second pulmonic sound; increased cardiac dulness to the right; variability of signs; dyspnea on exertion; may be cough; later, failing compensation and arrhythmia.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—A thrill is often associated with the palpable expansile pulsation and diastolic shock. It corresponds with systole and has a peculiar vibrating quality. It may be felt over the entire upper and middle precordia and usually also in the arteries of the neck and in the episternal notch.

Chief Signs.—See page 430.

Aortic Regurgitation.—*Characteristics.*—Occasionally there is a prolonged diastolic thrill felt at the base of the heart, a systolic thrill in the episternal notch, and a presystolic thrill near the apex, the latter suggestive either of a Flint murmur or of a true mitral stenosis.

Chief Signs.—See page 453.

Dilatation of the Aorta.—*Characteristics.*—A systolic thrill and a diastolic shock localized over the aortic area are not infrequent.

Chief Signs.—See page 431.

Exophthalmic Goiter (Graves' Disease).—*Characteristics.*—A systolic thrill is commonly to be felt in the second left interspace at the sternal edge.

Chief Signs.—See page 450.

Aortic Stenosis.—*Characteristics.*—With tolerable constancy a rather coarse systolic thrill, most intense in the aortic area (second right intercostal space), is felt. Rarely a similar thrill is palpable over the larger arteries near the surface.

Chief Signs.—May be no symptoms until decompensation occurs; heaving apex beat, displaced downward; local rough, systolic, aortic murmur, conducted into the carotids; diminished or absent second aortic sound; pulse slow, small, hard, prolonged.

Effort Syndrome (Neurocirculatory Asthenia).—*Characteristics.*—There is often a systolic thrill at the apex.

Chief Signs.—See page 444.

Anemia.—*Characteristics.*—Very occasionally a systolic thrill is felt in the second left intercostal space close to the sternum in association with a functional pulmonary murmur.

Chief Signs.—Presence of some debilitating disease; asthenia; pallor; dyspnea

on exertion; palpitation; edema of the feet; blood examination (low hemoglobin and red-cell count, irregularity in shape of the red cells, nucleated red cells, leukocytosis).

Congenital Pulmonary Stenosis.—*Characteristics.*—A systolic thrill may be felt over the base of the heart to the left of the sternum.

Chief Signs.—See page 455.

Patent Ductus Arteriosus.—*Characteristics.*—A systolic thrill is often felt at the base of the heart to the left; it may last throughout the cardiac cycle.

Chief Signs.—See page 455.

Less Common Causes.—Atheroma of the aorta; pervious interventricular septum; pulmonary regurgitation (diastolic thrill in the second left interspace); tricuspid regurgitation (systolic thrill over the xyphoid cartilage and lower sternal region); tricuspid stenosis (presystolic thrill over the xyphoid cartilage and lower sternal region).

FRICITION FREMITUS OVER THE PRECORDIA

Friction fremitus is perceptible as a delicate crackling or coarse crackling sensation, more circumscribed and superficial than a thrill.

Acute Fibrinous Pericarditis.—*Characteristics.*—With more or less constancy vibrations produced by the to-and-fro rub of the roughened pericardial surfaces are felt, especially toward the base of the heart. It is a very superficial vibration which does not exactly coincide with the heart sounds and bears no definite relation to them. It is most distinctly felt between the second and fourth intercostal spaces, at or near the left sternal border, and is exaggerated by pressure with the palpating finger and by making the patient bend forward. The pericardial friction sound is more common than the friction fremitus (see page 457).

Chief Signs.—See page 457.

Pericarditis with Effusion.—*Characteristics.*—The pericardial friction felt on palpation may lessen with the effusion, though it often persists at the base. When no longer palpable over the right ventricle it may be felt in the erect and not in the recumbent posture.

Chief Signs.—See page 362.

Acute Pleurisy.—*Characteristics.*—Pleuropericardial friction fremitus is sometimes felt when the pleural surfaces adjacent to the pericardium are roughened. This friction fremitus is synchronous with the heart sounds, especially the ventricular contraction. The sensation is most intense along the outer border of the heart between the fourth and sixth ribs; it is palpable during either inspiration or expiration, according to the pleural reflection implicated, whether pulmonary or costal.

Chief Signs.—See page 369.

INCREASED AREA OF CARDIAC DULNESS

Cardiac Hypertrophy.—*Characteristics.*—In general hypertrophy there is extension of the entire cardiac area. In left ventricular hypertrophy, which is the

most common type, the cardiac area of dulness is increased vertically upward, horizontally outward to the left, and obliquely downward, the upper limits sometimes reaching to the second interspace, the left border extending well beyond the midclavicular line, and the lower margin being at the level of the sixth or seventh interspace. In right ventricular hypertrophy the extension of dulness is in a horizontal direction beyond the right sternal border an inch or so to the right of this landmark and encroaching upon Ebstein's cardiohepatic angle. In auricular hypertrophy the extension of dulness is in the region of the base horizontally to the right or left according to the chamber involved.

Chief Signs.—(In general) full, regular, high-tension pulse; heaving apex beat; displacement of the apex beat; prolonged muscular, mitral, or tricuspid first sound with ringing accentuation of the aortic or pulmonic second sound; electrocardiography; x-ray.

For causes of Cardiac Hypertrophy, see page 437.

Cardiac Dilatation.—*Characteristics.*—The extension of the cardiac area or areas is similar to that of hypertrophy and often dilatation occurs with hypertrophy.

Chief Signs.—(In general) feeble, wavy, precordial impulse; ill-defined, displaced apex beat; small, rapid, irregular pulse; weak but sharp first sound with an enfeebled second sound; signs of failing compensation.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—By crowding the heart forward against the chest-wall, an aneurysm may cause the heart dulness to be increased, even independently of cardiac hypertrophy.

Chief Signs.—See page 430.

Pleurisy with Effusion.—*Characteristics.*—The flat percussion note over the fluid often blends with the area of cardiac dulness, so that it may be impossible to distinguish the point at which the one begins and the other ends.

Chief Signs.—See page 431.

Pericarditis with Effusion.—*Characteristics.*—An unnaturally large area of cardiac flatness is found, roughly pyramidal in outline, with the base downward and the apex in the upper sternal region; change in posture causes a change in size and alteration in shape of this area.

Chief Signs.—See page 362.

Fibroid Phthisis.—*Characteristics.*—Shrinkage of the left lung may give rise to an increase in the area of absolute cardiac dulness and draw the heart toward the left axilla. The impulse of the heart is frequently visible upon the chest-wall from the second to the fifth interspaces.

Chief Signs.—See page 431.

Chronic Interstitial Pneumonia (Cirrhosis of the Lungs).—*Characteristics.*—As in fibroid phthisis (see above).

Chief Signs.—See page 361.

Mediastinal Tumor.—*Characteristics.*—A tumor of the posterior mediastinum, by pushing the heart forward against the chest-wall, causes an increase in the area of cardiac dulness.

Chief Signs.—See page 432.

Less Common Causes.—Subphrenic abscess; carcinoma of the pericardium; carcinoma of the pleura; aneurysm of the heart; hydro-, hemo-, or pyopericardium; pneumonic consolidation (above the heart); encysted empyema or pleurisy (near

the heart); mediastinitis; hydrothorax; hemothorax; chylothorax; chronic adhesive pericarditis; coronary thrombosis.

DECREASED AREA OF CARDIAC DULNESS

Gaseous distention of the stomach normally diminishes the outline of cardiac flatness from below upward.

Hypertrophic Emphysema.—*Characteristics.*—The encroachment of the hyper-resonance diminishes or entirely obliterates the cardiac dulness, though the heart itself is often hypertrophied.

Chief Signs.—See page 416.

Atrophy of the Heart.—*Characteristics.*—The cardiac atrophy is part of a general cardiovascular hypoplasia, sometimes incident to chlorosis or lymphatism.

Pneumothorax.—*Characteristics.*—When left-sided, the clear tympany encroaches upon the triangle of cardiac flatness, obscuring it and perhaps displacing it to the right.

Chief Signs.—See page 416.

Less Common Causes.—Dementia præcox, hebephrenic and catatonic types (congenitally small cardiovascular system); pneumopericardium (a tympany replaces the pericardial flatness); chronic dry pleurisy (where adhesions anchor a resonant pulmonary border in front of the heart); cancer of the stomach.

INCREASED INTENSITY OF THE CARDIAC SOUNDS

The heart sounds are magnified normally by simple cardiac overstimulation, due, for example, to transient mental excitement or to the effects of alcohol, coffee, tobacco, and other stimulants. Febrile affections, generally, increase the intensity of the sounds in the incipient stages. An apparent accentuation of both cardiac sounds is occasionally encountered in subjects with very thin chest-walls.

Cardiac Hypertrophy.—*Characteristics.*—There is a loud and prolonged mitral first sound at the apex of dull-booming quality, and the aortic second sound is greatly accentuated (general or left ventricular hypertrophy).

For causes of Cardiac Hypertrophy, see page 437.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics.*—The sounds of the heart may be very intense and combined with a loud apical systolic murmur and a loud bruit at the base and over the manubrium.

Chief Signs.—See page 450.

Acute Myocarditis.—*Characteristics.*—The heart sounds are accentuated and short and the first sound lacks the normal muscular quality. The second pulmonic sound is usually sharply accentuated. Either the first or second sound may be reduplicated. A functional murmur at the mitral area is common.

Chief Signs.—See page 453.

Effort Syndrome (*Neurocirculatory Asthenia; Soldier's Heart*).—*Characteristics.*—The heart sounds are often accentuated.

Chief Signs.—See page 444.

Less Common Causes.—Fibroid phthisis (the heart being uncovered); surgical emphysema of the chest-wall; cardiac neurosis; pulmonary consolidations

(of the lappet of lung overlying the heart); carcinoma of the lungs (with infiltration of the lappet of lung overlying the heart).

CARDIAC HYPERTROPHY

In addition to the diseases enumerated below, hypertrophy is brought about by several causes which cannot be termed diseases. Prolonged physical exertion (as in athletics) eventually leads to hypertrophy. Nicotin, caffenin, and sexual excesses are also held competent to produce it. Excessive beer-drinking may lead to hypertrophy (Münich beer-heart).

Aortic Regurgitation.—*Characteristics.*—Hypertrophy and dilatation reach their limit in this condition (cor bovinum); there is downward and outward extension of the cardiac area due to hypertrophy of the left ventricle; later the left auricle and right ventricle also share in this dilatation and hypertrophy.

Chief Signs.—See page 453.

Arteriosclerosis (Involution Type).—*Characteristics.*—General hypertrophy of the heart occurs, the left ventricle being especially involved.

Chief Signs.—Advanced age; palpable thickening of the arteries; heightened blood-pressure; accentuation of the aortic second sound; cardiac, cerebral, and renal complications.

Chronic Myocarditis.—*Characteristics.*—The left ventricle and first part of the aorta are dilated and hypertrophied.

Chief Signs.—Hardening of the arteries; persistent high-tension pulse; often arrhythmia; feeble first apical sound of valvular quality; systolic apical murmur; ringing accentuation of the second aortic; attacks of decompensation.

Chronic Parenchymatous Nephritis (Chronic Bright's Disease).—*Characteristics.*—The heart may be hypertrophied, the arteries sclerotic, and the second aortic sound accentuated and ringing.

Chief Signs.—See page 515.

Chronic Interstitial Nephritis.—*Characteristics.*—The left ventricle first becomes hypertrophied, followed by general hypertrophy; the apex is displaced downward and to the left, and the impulse is forcible and may be heaving. The left ventricle first hypertrophies; later the enlargement is general.

Chief Signs.—See page 754.

Exophthalmic Goiter (Graves' Disease).—*Characteristics.*—In a well-developed case the visible area of cardiac pulsation is much increased. The essential feature of the goiter heart is enlargement, the hypertrophy for a time being limited to the left ventricle, but later becoming general.

Chief Signs.—See page 450.

Mitral Regurgitation.—*Characteristics.*—The area of cardiac dulness is increased horizontally and downward toward the left owing to bilateral ventricular enlargement, and occasionally the enlarged left auricle may be mapped out as an upward extension of the basic outline.

Chief Signs.—See page 451.

Mitral Stenosis.—*Characteristics.*—The left auricle first undergoes hypertrophy; as this fails, the right ventricle partakes of the hypertrophy. With incom-

petence of the latter chamber the right auricle dilates, followed by signs of failing compensation and hypertrophy of the left ventricle to overcome the venous stasis. The area of cardiac dullness is increased mainly to the right of the sternum.

Chief Signs.—See page 452.

Hypertrophic Emphysema.—*Characteristics.*—The right chambers are dilated and hypertrophied; in advanced cases the hypertrophy is general.

Chief Signs.—See page 416.

Essential Hypertension.—*Characteristics.*—The heart slowly hypertrophies, the left ventricle first. In time the heart may become very large.

Chief Signs.—See page 668.

Chronic Adhesive Pericarditis (*Adherent Pericardium*).—*Characteristics.*—The area of cardiac dullness is usually much increased; the limit of cardiac dullness above and to the left may be fixed due to pleuropericardial adhesions, and is uninfluenced by deep inspiration. The enlargement is due both to hypertrophy and to fibrosis and retraction of the anterior lung margin.

Chief Signs.—Usually a history of acute pericarditis; chronicity; fixation of the apex beat with undulations from the third space to the apex; immobility of the anterior pulmonary borders; systolic retraction; diastolic shock; pericardial friction sound; pulsus paradoxus; diastolic collapse of the jugular veins; may be symptoms of cardiac failure.

Aortic Stenosis.—*Characteristics.*—Left ventricular hypertrophy is denoted by downward and outward extension of cardiac dullness, but not to so great an extent as in aortic regurgitation.

Chief Signs.—See page 454.

Less Common Causes.—Syphilis of the heart (chronic myocarditis); chronic adhesive pleurisy; fibroid phthisis; chronic interstitial pneumonia; hydronephrosis; polycystic kidney; primary congenital cardiac hypertrophy; aneurysm of the aorta; arteriovenous aneurysm; malignant hypertension; congenital heart disease.

DECREASED INTENSITY OF THE CARDIAC SOUNDS

In obesity the chest-wall may be so thick as to diminish the intensity of the heart sounds. The same holds true in thick-walled, muscular subjects and in edema of the thorax. In cardiac asthenia attending conditions of collapse, shock, great debility, or anemia, the heart sounds are weak.

Chronic Myocarditis.—*Characteristics.*—The tones of the heart are enfeebled, muffled, and impure in accordance with the gravity of the existing cardiac asthenia. The muscular sound is often indistinct or even inaudible, so that the valvular quality of the heart sounds predominate. An apical systolic murmur is usually present.

Chief Signs.—See page 449.

Hypertrophic Emphysema.—*Characteristics.*—The heart sounds are usually feeble but clear.

Chief Signs.—See page 416.

Pericarditis with Effusion.—*Characteristics.*—The cardiac sounds are indistinct, muffled, or inaudible except at the base, where increased intensity of the second sound is the rule.

Chief Signs.—See page 362.

Pleurisy with Effusion.—*Characteristics.*—When the heart is displaced under the sternum in a left-sided pleural effusion the heart sounds may be diminished in intensity.

Chief Signs.—See page 416.

Less Common Causes.—Ulcerative endocarditis; pleuropericardium (bruit de Moulin); coronary thrombosis.

ACCENTUATION OF THE FIRST SOUND AT THE APEX

This is likely to be exaggerated by nervous excitement, by physical exertion, and by flatulence. This condition may also maintain in high-strung neurotic persons or in dyspeptics. In acute febrile diseases due to incipient myocarditis the apical first sound is commonly accentuated and sharp.

Mitral Stenosis.—*Characteristics.*—There is an unusually sharp, clear first sound which follows the presystolic murmur. The sound is described as “snapping” and communicates a very decided shock to the ear. When decompensation sets in, this may be the sole auscultatory sign distinguishable at the apex.

Chief Signs.—See page 452.

Cardiac Dilatation.—*Characteristics.*—The first sound is short, sharp, and high-pitched though weak, and has a valvular quality like that of the second sound.

Chief Signs.—See page 435.

Cardiac Hypertrophy.—*Characteristics.*—The mitral first sound at the apex is loud, prolonged, and of a booming quality, though it is often muffled and impure. For causes of Cardiac Hypertrophy, see page 437.

ENFEEBLEMENT OF THE FIRST SOUND AT THE APEX

Shock, great anemia, collapse, and vagus paresis in general, cause the first sound to be diminished in intensity.

Cardiac Dilatation.—*Characteristics.*—In extreme cases of cardiac dilatation the first sound is enfeebled.

Chief Signs.—See page 435.

Myocarditis.—*Characteristics.*—The muscular tone is indistinct or even inaudible, so that the valvular quality of the sound predominates; but in some cases the valvular tone also is suppressed, so that it is difficult to hear any distinct cardiac sounds whatever.

Chief Signs.—See page 449.

Mitral Regurgitation.—*Characteristics.*—At the apex there is a systolic murmur which wholly or partly obliterates the first sound.

Chief Signs.—See page 451.

ACCENTUATION OF THE AORTIC SECOND SOUND

This may arise from purely normal causes such as temporary vasomotor stimulation, a simple overacting heart, and pregnancy. The aortic second sound is

fainter than the second pulmonary up to puberty, after which it is louder. In order to be termed accentuated it must be louder than it should be at the period of life of the patient. Accentuation is a sign of increased arterial tension within the aorta and the systemic circulation.

Arteriosclerosis.—*Characteristics.*—A ringing aortic second sound is almost always present.

Chief Signs.—See page 437.

Chronic Aortitis.—*Characteristics.*—The aortic second sound is loud, clear and ringing, and has a tambourlike quality.

Chief Signs.—See page 454.

Acute Parenchymatous Nephritis (*Acute Bright's Disease*).—*Characteristics.* The second sound in the aortic area is accentuated along with the hard pulse and increased tension.

Chief Signs.—See page 642.

Chronic Parenchymatous Nephritis (*Chronic Bright's Disease*).—*Characteristics.*—The aortic second sound is accentuated.

Chief Signs.—See page 642.

Chronic Interstitial Nephritis.—*Characteristics.*—Commonly the second sound at the aortic cartilage is accentuated, a characteristic sign of increased tension. The sound in extreme cases may have a bell-like quality.

Chief Signs.—See page 754.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—An intense and low-pitched diastolic sound may be heard over the aortic area exactly synchronous with the palpable diastolic shock. This intense sound is sometimes modified by a diastolic murmur.

Chief Signs.—See page 430.

Acute Aortitis.—*Characteristics.*—The quality of the second aortic sound is distinctive. It is a musical bell-like sound which is somewhat tympanitic.

Chief Signs.—See page 454.

Cardiac Hypertrophy.—*Characteristics.*—The aortic second sound is greatly accentuated in left ventricular hypertrophy and is loud, clear, and ringing. Most of the diseases enumerated above are accompanied by such a hypertrophy.

Chief Signs.—See page 434.

Less Common Causes.—Myocarditis (early); acute dilatation of the heart.

ENFEEBLEMENT OF THE AORTIC SECOND SOUND

General vasomotor relaxation (causing lowered blood-pressure), and profound anemia produce enfeeblement.

Myocarditis.—*Characteristics.*—Advanced degrees of myocardial degeneration cause enfeeblement of this sound due to feeble recoil of the aortic valves following the weakened left ventricular contraction.

Chief Signs.—See page 449.

Mitral Stenosis.—*Characteristics.*—The aortic second sound becomes progressively enfeebled as the stenosis increases.

Chief Signs.—See page 452.

Mitral Regurgitation.—*Characteristics.*—The second aortic sound is somewhat enfeebled.

Chief Signs.—See page 451.

Aortic Stenosis.—*Characteristics.*—The aortic second sound is more or less muffled and enfeebled, sometimes to the point of actual extinction, and it may further be obscured by a diastolic bruit.

Chief Signs.—See page 454.

Aortic Regurgitation.—*Characteristics.*—The aortic second sound tends to be replaced by the characteristic murmur of the disease in proportion to the development of the insufficiency.

Chief Signs.—See page 453.

ACCENTUATION OF THE PULMONIC SECOND SOUND

The second pulmonic sound, heard at the second left intercostal space near the sternum, is normally louder than the aortic second sound in children.

Mitral Regurgitation.—*Characteristics.*—Accentuation of the second pulmonic sound is a valuable corroborative sign of mitral disease. It is due to the pulmonary congestion incident to the cardiac lesion.

Chief Signs.—See page 451.

Mitral Stenosis.—*Characteristics.*—The pulmonic second sound becomes sharply accentuated and frequently doubled, especially in the second stage, that of beginning failure of the left auricle with hypertension in the pulmonary circuit. The aortic second becomes enfeebled. As decompensation develops (third stage) the accentuation of the pulmonic second sound at the base disappears, and its aortic equivalent becomes still weaker.

Chief Signs.—See page 452.

Lobar Pneumonia.—*Characteristics.*—So long as the right ventricle reacts adequately to the stress of increased pulmonary tension the pulmonic second sound is accentuated and of unduly high pitch. Enfeeblement forebodes failure of the right heart.

Chief Signs.—See page 412.

Chronic Pulmonary Tuberculosis (Phthisis).—*Characteristics.*—Accentuation and reduplication of the pulmonic second sound is commonly heard, especially in the moderately advanced and advanced stages.

Chief Signs.—See page 412.

Hypertrophic Emphysema.—*Characteristics.*—The pulmonic second sound is accentuated during the phase of right ventricular hypertrophy but weakens progressively as this chamber becomes inadequate and finally dilates. Right ventricular hypertrophy is often observed in this disease.

Chief Signs.—See page 416.

Acute Myocarditis.—*Characteristics.*—The second pulmonic sound is usually sharply accentuated.

Chief Signs.—See page 453.

Acute Endocarditis.—*Characteristics.*—Accentuation of the second pulmonic sound is frequently present.

Chief Signs.—See page 452.

Fibroid Phthisis.—*Characteristics.*—The second pulmonic sound is accentuated and ringing unless the right heart dilates.

Chief Signs.—See page 431.

Chronic Interstitial Pneumonia (*Cirrhosis of the Lung*).—*Characteristics.*—As in fibroid phthisis (see above).

Chief Signs.—See page 361.

Pericarditis with Effusion.—*Characteristics.*—Increased intensity of the second sound is the rule, the apex sounds being muffled.

Chief Signs.—See page 362.

Less Common Causes.—Bronchopneumonia; chronic myocarditis; congestion of the lungs.

ENFEEBLEMENT OF THE PULMONIC SECOND SOUND

Relative Tricuspid Regurgitation (*In Cardiac Dilatation*).—*Characteristics.*—Enfeeblement of the second pulmonic sound occurs. This enfeeblement progresses as dilatation ensues. This lesion is exceedingly common as part of a cardiac decompensation with dilatation of the right heart.

Chief Signs.—See page 456.

Organic Tricuspid Regurgitation.—*Characteristics.*—The second pulmonic sound is enfeebled. This lesion, however, is comparatively uncommon.

Chief Signs.—See page 456.

Pulmonary Stenosis.—*Characteristics.*—The second pulmonic sound is very weak.

Chief Signs.—See page 455.

Less Common Causes.—Pulmonary regurgitation.

REDUPLICATION OF THE CARDIAC SOUNDS

If the first sound be reduplicated the precordial sounds may be imitated by “lurrup-dup, lurrup-dup”; if the second sound be doubled it may be imitated by “lup-durrup, lup-durrup”; if both sounds be reduplicated, which is less common, the effect will resemble “lurrup-durrup, lurrup-durrup.” In certain cases this reduplication resembles the hoof beats of a galloping horse, so-called gallop rhythm. In other cases it resembles the double beat of a snare drum. Reduplication is sometimes physiological, as in forced inspiration, and in childhood. It may occur also in fevers, dyspnea, and in anemias.

Mitral Stenosis.—*Characteristics.*—The second sound at the apex is occasionally reduplicated, while the pulmonic second sound at the base is frequently doubled (double shock sound). Reduplication of the second sound at the apex, when noted, is an early and characteristic sign, almost constantly developing in advance of the presystolic rumble of the lesion.

Chief Signs.—See page 452.

Mitral Regurgitation.—*Characteristics.*—The second pulmonic sound is often reduplicated.

Chief Signs.—See page 451.

Cardiac Hypertrophy.—*Characteristics.*—In the event of unequal intraven-

tricular tension, which is common, the second sound is reduplicated, and in some instances the first sound also. Reduplication of the first sound at the apex may be the first intimation of oncoming dilatation of the left ventricle.

Chief Signs.—See page 434.

Arteriosclerosis.—*Characteristics.*—There may be reduplication of the first sound at the apex and sometimes of the second sound at the base, or at the base and apex.

Chief Signs.—See page 437.

Chronic Interstitial Nephritis.—*Characteristics.*—The first sound at the apex may be reduplicated.

Chief Signs.—See page 754.

Acute Myocarditis.—*Characteristics.*—There may be reduplication of the second sound at the base or at the base and apex.

Chief Signs.—See page 453.

Acute Endocarditis.—*Characteristics.*—Reduplication of the second pulmonic sound is often noted.

Chief Signs.—See page 452.

Cardiac Dilatation.—*Characteristics.*—Reduplication in the form of gallop rhythm with triple beat sometimes occurs.

Chief Signs.—See page 435.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—With the development of tachycardia, even moderately severe, reduplication of the heart sounds is frequent, particularly the second pulmonic, less frequently the first sound at the apex.

Chief Signs.—See page 412.

Chronic Adhesive Pericarditis.—*Characteristics.*—There may be reduplication of the first sound at the apex.

Chief Signs.—See page 438.

Pericarditis with Effusion.—*Characteristics.*—There may be reduplication of the second sound at the base, or the base and apex.

Chief Signs.—See page 362.

Less Common Causes.—Effort syndrome; hypertrophic emphysema; fibroid phthisis; chronic interstitial pneumonia; aneurysm of the arch of the aorta; postural albuminuria.

TACHYCARDIA

(Rapid Heart)

The heart action is increased in frequency after exertion, with excitement or other emotional causes, and following the ingestion of a meal. Pain often causes tachycardia. Shock and collapse are accompanied by a rapid, feeble heart action. The commonly used drugs, alcohol, nicotin, tea, and coffee, when taken in excess, also produce rapid heart action. Febrile affections, except yellow fever and those accompanied by intracranial hypertension, are usually accompanied by frequent pulse, usually increased eight to ten beats to each rise of one degree of temperature; in typhoid fever, influenza, and pneumonia, however, the pulse is relatively slow, while in sepsis, tuberculosis, scarlet fever, and acute miliary tuberculosis the pulse

rate is disproportionately high. Violent coughing quickens the pulse. The following diseases are accompanied by tachycardia.

Neurosis.—*Characteristics.*—Rapid action of the heart, especially with the least excitement, is often a source of great distress. It may be accompanied by palpitation, precordial oppression, and dizziness. The rhythm may be irregular. These phenomena are due to the sympathicotonia.

Chief Signs.—See page 450.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics.*—Tachycardia is one of the cardinal symptoms. The rate may be anywhere from one hundred to two hundred. It is accompanied by general vascular throbbing and forcible heart action, and high pulse pressure.

Chief Signs.—See page 450.

Paroxysmal Tachycardia.—*Characteristics.*—The rate is very rapid and regular, and may be as high as two hundred; onset and defervescence are sudden. The rate is uninfluenced by exercise, posture, etc. The duration is a few minutes to a few hours or days.

Chief Signs.—See page 448.

Auricular Fibrillation.—*Characteristics.*—The heart beats are rapid and absolutely irregular as to force and rhythm.

Chief Signs.—See page 447.

Effort Syndrome (*Neurocirculatory Asthenia; Soldier's Heart*).—*Characteristics.*—An increased heart rate is very common, but exaggerated response to emotional disturbance or exercise is most characteristic.

Chief Signs.—Breathlessness on exertion out of proportion to the exertion made; undue fatigue on exercise; palpitation; occurrence under undue psychic or physical strain; attacks of giddiness and fainting; precordial pain; general neurotic symptoms; basal metabolic rate not increased.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—Acceleration of the pulse is a very frequent manifestation, and may occur as an early symptom, even without fever. As the disease progresses the rapidity of the pulse rate becomes more marked. During the last stage of the disease the pulse rate is usually very high, rising to 120 or more.

Chief Signs.—See page 412.

Acute Simple Endocarditis.—*Characteristics.*—The rate is commonly increased, especially in febrile patients, and may be altered in volume, tension, and rhythm. Suspicion is excited, if in a case of rheumatic fever, the heart continues to beat rapidly, the fever increases, and there is palpitation but no aggravation of the joint trouble.

Chief Signs.—See page 450.

Acute Myocarditis.—*Characteristics.*—A rapid pulse of low tension is noted with muffled impurity of the cardiac sounds. There may be arrhythmia. Tachycardia due to this cause is especially apt to follow diphtheria and influenza and may persist for months or indefinitely.

Chief Signs.—See page 453.

Cardiac Decompensation.—*Characteristics.*—The heart action may be rapid, feeble, and arrhythmic; at other times it may be slow. No one sign or combination of signs is characteristic.

Chief Signs.—See page 449.

Auricular Flutter.—*Characteristics.*—The rate is rapid (between 120 and 160), regular and constant. It is uninfluenced by exercise, posture, etc.

Chief Signs.—See page 448.

Pericarditis with Effusion.—*Characteristics.*—The heart beats are rapid and small, sometimes irregular, and the pulse may present the characters known as *pulsus paradoxus*, in which the pulse becomes very weak during each inspiration.

Chief Signs.—See page 362.

Hemorrhage.—*Characteristics.*—The heart action is rapid and feeble, the condition becoming progressively worse as the hemorrhage increases.

Chief Signs.—See page 395.

Acute Chorea (*Sydenham's Chorea; St. Vitus' Dance*).—*Characteristics.*—Rapidly of the heart action is a frequent finding.

Chief Signs.—See page 45.

Atropin Poisoning.—*Characteristics.*—The heart beats rapidly in proportion to the amount of atropin ingested, due to the peripheral vagus paralysis.

Chief Signs.—History of ingestion; dilated pupils; skin rash (often an erythema); dryness of the mucous membranes; hoarseness; dysphagia; loquacity; nausea and vomiting; coma or convulsions.

Less Common Causes.—Mountain sickness; arteriosclerosis; infective or malignant endocarditis; mitral stenosis; coronary thrombosis; cerebral concussion; acute ascending paralysis (120 to 130 per minute); arthritis deformans (90 to 110 per minute); acute anterior poliomyelitis; heat exhaustion; encephalitis lethargica; tabes dorsalis (cardiac crises); mediastinal tumor; aneurysm of the arch of the aorta; tracheobronchial adenitis; effects of thyroid extracts; periarteritis nodosa; chronic adhesive pericarditis; diphtheritic paralysis; pneumogastric neuritis.

BRADYCARDIA

(*Slow Heart*)

A slow rate is normal with some individuals. Any noteworthy diminution below 50 or 60 should be regarded as pathological and the cause looked for. The heart beat should be determined with the pulse to exclude the failure of ventricular action to send waves to the radial, as, if every other beat only is transmitted, a bradycardia will be simulated. A slow heart action is generally found during the postfebrile stages of acute infections, especially typhoid fever and influenza, in grave cachexias, and in the toxemias of icterus. As age advances the pulse rate becomes slow. During pregnancy (latter part) and the puerperium the pulse may be slow.

Bradycardia may be considered as due to one of two causes, namely, intracardiac disease involving the conduction bundle of His, and pathologic or functional defect of the vagus nerve. If the former is the cause, atropin has no effect on the rate, nor is there a reaction to respiratory movements, to exertion, posture, or fever. When the vagus is at fault there is marked acceleration of the heart after the injection of atropin (gr. 1/60) and also with exertion, respiration, change of posture, and fever.

Heart-Block (*Complete*).—*Characteristics.*—The heart rate is slow, usually

permanently so, but sometimes paroxysmally; it may be lowered to 40-20-6 per minute. If the rate suddenly drops to a very slow one Stokes-Adams syndrome may develop.

Chief Signs.—See page 448.

Digitalis Effect.—*Characteristics.*—The heart rate tends to become slowed by digitalis in proportion to the quantity employed. It may become also irregular in rhythm (see “Cardiac Arrhythmia, Causes of,” page 448).

Chief Signs.—History of use; nausea; vomiting; diarrhea; headache; oliguria.

Opium Poisoning.—*Characteristics.*—There is bradycardia in the stage of asphyxia.

Chief Signs.—History of use; stupor or coma; contracted pupils; slow respiration.

Cerebrospinal Leptomeningitis (*Epidemic Cerebrospinal Fever; Tuberculous Meningitis; Pneumococcic Meningitis; Pyogenic Meningitis; Leptomeningitis Secondary to Infectious Disease*).—*Characteristics.*—Slowness of the cardiac rate in relation to the temperature is one of the striking features of the disease, even at times in the early stages. In epidemic form the rate may be very rapid in children and in adults at first it is usually full and strong. In tuberculous meningitis the rate is first rapid but later irregular and slow.

Chief Signs.—Headache; fever; delirium; convulsions; stiffness and retraction of the muscles of the neck; rigidity, twitching, or spasm of the muscles; cerebral nerve palsies (in basic cases); coma; positive Brudzinski and Kernig signs; pupils first contracted, later dilated or unequal; spinal puncture (revealing the type of meningeal infection).

Cerebral Compression (*Meningeal Hemorrhage; Depressed Fracture*).—*Characteristics.*—The heart rate is slow but becomes rapid and intermittent in the final stages.

Chief Signs.—See page 396.

Cerebral Tumor.—*Characteristics.*—Bradycardia may occur as one of the general symptoms of tumor, especially one in the neighborhood of the medulla oblongata; but there may be tachycardia.

Chief Signs.—Headache; optic neuritis; vomiting; giddiness; mental disturbances; convulsions; focal symptoms (paralysis, etc.); x-ray.

Cerebral Abscess.—*Characteristics.*—Slowing of the cardiac rate, permanent or transient, is a corroborative sign of intracranial abscess, but the pulse rate may be accelerated in some cases.

Chief Signs.—History of injury, ear suppuration, or focus of infection (as lung abscess); persistent fever; headache; may be tenderness; drowsiness; vomiting; stupor; optic neuritis; dilated pupil on the diseased side; ptosis or strabismus; x-ray.

Apoplexy (*Cerebral Hemorrhage*).—*Characteristics.*—The heart rate is slow, and the pulse is full and of increased tension.

Chief Signs.—See page 315.

Pachymeningitis Hæmorrhagica (*Cerebral Form; Hematoma of the Dura Mater*).—*Characteristics.*—The heart rate is slow and irregular.

Chief Signs.—Occurrence in the middle age period; occurrence frequently in the chronic psychoses, chronic alcoholism, and syphilis; headache; vomiting; con-

tracted pupils with slow reaction to light; gradually increasing pareses and paralyses; coma.

Uremia.—*Characteristics.*—The heart rate may be slow.

Chief Signs.—See page 393.

Hypertrophic Emphysema.—*Characteristics.*—Bradycardia is not infrequent.

Chief Signs.—See page 416.

Myxedema (*Larval Myxedema; Hypothyroidism*).—*Characteristics.*—The heart rate is apt to be infrequent (40 to 60) but regular; and the pulse is usually of low tension.

Chief Signs.—Preponderance in females (6:1); obesity; inelastic swelling of the skin (myxedema); altered physiognomy; slow cerebration; slow gait; long duration; lowered basal metabolic rate; therapeutic test with thyroid substances.

Aortic Stenosis.—*Characteristics.*—The heart has a slow rate, and the pulse is of moderate or small volume, of normal rhythm, and of prolonged deliberate rise and fall.

Chief Signs.—See page 454.

Less Common Causes.—Epilepsy (also in so-called vago-vasal attacks in which there are no convulsions); diabetes; appendicitis (occasional rates of 60 to 65 per minute); lead poisoning; melancholia; crises of febrile pulmonary affections; hydrocephalus (from compression of the brain); mumps (meningitis); hypopituitarism; general paresis; medullary lesion; bronchial asthma; fatty heart; chlorotic anemia; fibroid heart; cerebral aneurysm; coronary sclerosis; ergotism; mania; sunstroke; gall-stones (cholelithiasis); dyspepsia; gastric ulcer; transverse myelitis (cervical region); gastric cancer; intestinal helminthiasis; appendicitis; migraine; arteriosclerosis; pneumonia (crises); adrenalin effect; salicysm.

CARDIAC ARRHYTHMIA, FORMS OF

Sinus Arrhythmia.—*Characteristics.*—The heart beats more rapidly during inspiration and more slowly during expiration (this is physiological and occurs normally in young persons). Other types occur but are rare; they show no correlation with the respiratory phases. The pulse is comparatively slow in these pathological types, with irregularly long diastolic pauses.

Auricular Fibrillation.—*Characteristics.*—There is absolute irregularity of the heart beat; the heart beats are rapid, entirely haphazard, and vary continuously in rate, intensity, and interval.

Chief Signs.—Usually a history of chronic heart disease; presence of or history of attacks of decompensation; rapidity of heart action unless digitalized; pulse deficit; increase of irregularity by exercise; polygraphic and electrocardiographic examination.

Premature Contraction (*Extrasystole*).—*Characteristics.*—The regular rhythm of the heart is interrupted at regular or irregular intervals by sudden breaking of the rhythm by a premature beat. The premature beat is not as strong as the regular beat and may not be felt at the wrist. If not strong enough to open the valves the second sound is not audible. Premature contractions arise from an ectopic focus in the auricles or ventricles. Ventricular ectopic beats are

characterized by the fact that they are followed by compensatory pauses, so that the time occupied by the cycle of the premature beat is equal to that of two normal contractions. Auricular extrasystoles generally lack the compensatory pause. The regular systole following an extrasystole seems to be stronger than normal.

Chief Signs.—Disappearance on exertion when due to functional causes, increase when accompanied by pathological change; presence of reflex cause or organic heart disease (functional or organic); polygraphic and electrocardiographic examination.

Heart-Block.—*Characteristics.*—The heart beats at an abnormally slow rate. If the rate is below 40 or 45 the block is probably complete, the auricles and ventricles beating independently. When the slow rhythm develops suddenly and is of extreme degree, loss of consciousness and possible convulsions may occur (Adams-Stokes syndrome). If the block is partial every other beat may be dropped or every third beat, and so on. Exercise, by increasing the rate, usually causes the disappearance of partial blocking and produces regularity of the ventricle. An abrupt doubling or exact halving of the apex rate is quite suggestive of partial block. Prolonged conduction time, shown in the electrocardiogram by a P.R. interval longer than the normal, is the first form of this arrhythmia.

Chief Signs.—Sometimes visible pulsations of the veins of the neck, at a faster rate than the apex beat; pulse rate little influenced by exercise, posture, etc.; polygraphic and electrocardiographic examinations.

Paroxysmal Tachycardia.—*Characteristics.*—The heart beats paroxysmally at a regular rate between 150 and 200 beats per minute for periods of a few minutes to a few hours or for several days; the onset and cessation of the abnormal rate are sudden. The rate is not influenced by posture, exercise, etc.

Chief Signs.—Palpitation; weakness; gastric symptoms; lowered blood-pressure; may be congestion or edema of the lungs; polygraphic and electrocardiographic tracings.

Auricular Flutter.—*Characteristics.*—The heart beats continuously at the rate of 120 to 160 per minute (although it sometimes slows down to 30–38 per minute). The rate remains unchanged by rest, exercise, or change of posture. While the ventricle is beating at one rate the auricle is beating two, three, or four times as fast.

Chief Signs.—Electrocardiography.

Pulsus Alternans.—*Characteristics.*—The heart beats are alternately larger and smaller, a condition sometimes difficult to recognize by ordinary means, and when discovered usually denoting a serious myocardial condition.

Chief Signs.—Polygraphic tracings and sphygmomanometer readings.

Less Common Causes.—Ventricular escape; ventricular fibrillation; nodal extrasystoles; shortened conduction time; sino-auricular block.

CARDIAC ARRHYTHMIA, CAUSES OF

(See also "Tachycardia," page 443; "Bradycardia," page 445; and "Reduplication of the Cardiac Sounds," page 442.)

The conditions with which cardiac irregularity is associated are numerous. Arrhythmias are functional, produced by extracardiac causes, or organic, associated

with organic heart disease. Sinus arrhythmia is almost always physiological, being quite common in children and young adults, and occurring at times in the middle-aged. Following febrile diseases and rheumatic fever it may be regarded as a result of toxic or infectious myocarditis of an innocent nature and of favorable prognosis. Of all the other arrhythmias, premature contractions (extrasystoles) are the most benign; auricular premature contractions are usually of functional origin, the ventricular may be functional or organic. The onset and crisis of acute catarrhal febrile affections are frequently marked by premature contractions. The arrhythmia may exist as a life-long condition without any recognizable cause and without any impairment of the action of the heart. In debilitated persons there may be an irritable weakness of the heart associated with extrasystoles and distressing palpitation. Excessive use of tea, coffee, and tobacco may be exciting factors. Collapse, senility, overwork and overexertion are other causes. Paroxysmal tachycardia is another arrhythmia which is more often functional than organic. The other forms of irregularity are usually due to organic heart disease.

Chronic Myocarditis (*Cardiosclerosis*).—*Characteristics*.—The types of arrhythmias encountered are of some clinical significance. As failure becomes imminent irregularities begin to appear, the first type usually being premature contractions (extrasystoles), most frequently of the ventricular variety. The next most frequent type is auricular fibrillation. Heart-block is usually found in advanced cases only. Prolonged conduction time may be the only evidence of myocardial degeneration in some cases. In isolated instances, attacks of paroxysmal tachycardia alone, or alternating with auricular fibrillation, are found. In senile cardiosclerosis in which the cardiosclerosis is accompanied by palpably thickened and tortuous arteries, auricular fibrillation is very common. Sudden death may occur from ventricular fibrillation.

Chief Signs.—History of chronic intoxications or infectious diseases (including syphilis) or previous attacks of decompensation; may be precordial pain; feeble, irregular pulse; dyspnea on exertion; arteriosclerosis.

Chronic Endocarditis (*Valvular Disease*).—*Characteristics*.—Auricular fibrillation is encountered most frequently in mitral disease and especially in mitral stenosis. In certain cases this arrhythmia is a striking feature throughout the course of the disease. Attacks of paroxysmal tachycardia are frequent in decompensated mitral stenosis. When severe decompensation in this lesion is ushered in by the development of auricular fibrillation, the arrhythmia, once established, usually becomes permanent. Paroxysmal tachycardia may occur in association with mitral stenosis. In decompensated mitral regurgitation, the usual cardiac irregularities are, in the beginning, extrasystoles (commonly ventricular), and in the later stages, auricular fibrillation. In aortic stenosis, auricular fibrillation occurs only in the terminal stages. Attacks of tachycardia, often paroxysmal, are prone to occur in aortic regurgitation. Auricular flutter may be associated with valvular lesions.

For the symptoms of the various valvular lesions, see "Cardiac Murmurs," page 451.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics*.—Auricular or ventricular extrasystoles may mark the beginning of decompensation, after which they remain as permanent arrhythmias. Heart-block occurs mainly in decompensation.

pensation in cases of cardiosclerosis or myocarditis. When due to mitral stenosis, auricular fibrillation is the principal arrhythmia; it is common also in other forms of heart disease. Auricular flutter is most frequent in older people with cardiosclerosis in the period of decompensation. Gallop rhythm is common in heart failure.

Chief Signs.—Precordial pain; dyspnea; edema; increasing cyanosis; oliguria and albuminuria; enlarged liver; distention of the jugulars; cardiac murmurs; cardiac hypertrophy or dilatation.

Acute Simple Endocarditis.—*Characteristics.*—Next in frequency to moderate pulse acceleration is the occurrence of extrasystoles. Other arrhythmias are uncommon. In exacerbations of simple rheumatic endocarditis, however, paroxysmal tachycardia, auricular fibrillation, and auricular flutter, do occur, differing in this respect from the original onset.

Chief Signs.—Presence or history of infection (especially rheumatic fever, tonsillitis, and chorea); moderate fever; precordial distress; dyspnea; rapid pulse; presence of fleeting murmurs; accentuation of the second pulmonic sound; gradually developing impurity of the cardiac sounds; leukocytosis.

Digitalis Effect.—*Characteristics.*—Premature contractions may develop coincidently with the full digitalis effect, and especially that form known as pulsus bigeminus (every alternate beat premature). Bradycardia is not uncommon. Digitalis occasionally produces prolonged conduction time, and complete or incomplete heart-block may result from overdigitalization. Pulsus alternans may occur during digitalis administration. In some cases sinus arrhythmia, phasic in type, or independent of respiration, develops, at other times auriculoventricular dissociation, auriculoventricular or nodal rhythm, auricular standstill, or even ventricular fibrillation. Any combination of the above irregularities may be met with.

Chief Signs.—History of use; nausea; vomiting; diarrhea; headache; oliguria.

Dyspepsia.—*Characteristics.*—Premature contractions (extrasystoles) are not uncommon, usually auricular in type. They are entirely reflex phenomena. Paroxysmal tachycardia may be inaugurated by an attack of indigestion.

For causes of Dyspepsia, see page 487.

Neurosis.—*Characteristics.*—There may be an irritable weakness of the heart associated with extrasystoles and palpitation of the most distressing character.

Chief Signs.—Functional disturbances of the viscera; frequently phobias, compulsions, sensorimotor disturbances, or loss of consciousness; exclusion of organic disease; curability by psychogenic methods.

Exophthalmic Goiter (Graves' Disease).—*Characteristics.*—Auricular fibrillation is comparatively common in severe hyperthyroidism. It may be transient or continuous and is more apt to occur in individuals over forty-five years of age and in those who have had rheumatic infections. It may disappear after operative measures which reduce thyroidal activity. Auricular flutter may also occur. Tachycardia is one of the cardinal symptoms of this disease.

Chief Signs.—Onset gradual; occurrence usually in females (ten to one); enlargement of the thyroid; tachycardia and circulatory disturbances; exophthalmos; tremor; nervousness; sweating; wasting; headache; anemia; may be toxic crises; increased basal metabolic rate.

Arteriosclerosis (With Nephritis and Hypertension).—*Characteristics.*—Ven-

tricular extrasystoles are very common, occurring at irregular intervals and usually separated by many normal contractions. Auricular flutter may occur especially in elderly males.

Chief Signs.—Occurrence usually after middle age; thickened arteries; high blood-pressure; left ventricular hypertrophy with accentuation of the second aortic sound; headache; vertigo; may be confusion and lack of attention; later, may be progressive dementia, transient paralysis, and aphasia, or cerebral hemorrhage; sclerosis of the retinal vessels (ophthalmoscopy).

Less Common Causes.—Chronic adhesive pericarditis; aerophagia nervosa; aneurysm of the heart; effort syndrome; apoplexy; aneurysm of the arch of the aorta; arsenic poisoning; concussion of the brain; cardiac displacement; hypertrophic emphysema; malignant endocarditis; gangrene of the lung; hypochondriasis; influenza; jaundice; lesions of the medulla; acute myocarditis; acute cholecystitis (extrasystole); peritonitis (extrasystole); cerebral tumor (extrasystole); cardiac neurosis; coronary thrombosis (auricular fibrillation may be an initial symptom; pulsus alternans); acute pericarditis; edematous laryngitis; infundibular syndrome; tuberculous meningitis; multiple neuritis; severe hemorrhage (pathological sinus arrhythmia); ascites; rupture of an aortic cusp; spermatorrhea; atropin poisoning; cardiac hypertrophy (for causes, see page 437); tracheobronchial adenopathy; diphtheritic paralysis; mediastinal tumor; thyroid intolerance (poisoning by thyroxin or thyroid extracts); pneumogastric neuritis; scurvy.

CARDIAC MURMURS

(See also "Cardiorespiratory Murmurs," page 456; and "Precordial Friction Sound," page 457.)

Cardiac murmurs are functional or organic. Functional murmurs are not dependent on permanent structural defects of valvular mechanism, while organic murmurs are. Functional murmurs are usually systolic in time, faint and blowing in quality, not conducted far beyond the precordia, and are most common at the pulmonic area. They are not productive of cardiac hypertrophy, cause no distinct pulse changes or alterations in the basic cardiac sounds, and have a transient, fleeting character. There is usually no history of organic endocardial disease. Organic murmurs are dependent on structural deformities of the valves or orifices and denote stenosis or regurgitation.

MITRAL AREA MURMURS

These murmurs are heard most intensely at the mitral area, which is indicated by a circle about one inch in diameter centered at the cardiac apex. They are either presystolic or systolic in time, the former indicating obstruction and the latter incompetence. Functional systolic murmurs sometimes occur in febrile disorders. Simple systolic murmurs at the apex are of little import unless accompanied by definite signs of cardiac disease.

Mitral Regurgitation.—*Characteristics.*—The first sound at the apex is wholly

or partly replaced by a murmur, usually soft and blowing, which is transmitted to the left, usually into the axilla and sometimes as far backward as the inferior angle of the left scapula.

Chief Signs.—History of infection (rheumatic usually); murmur as above; accentuation of the second pulmonic sound; bilateral ventricular enlargement; sometimes reduplication of the second sound at the base.

Mitral Stenosis.—*Characteristics.*—A rough, rumbling, presystolic murmur, abruptly terminating in a sharp, snappy first sound, and followed by a distinct, somewhat reduplicated second sound, is heard in the stage of adequate compensation. The murmur is not transmitted and varies in intensity and duration from time to time. As the left auricle begins to fail the murmur becomes prolonged and may occupy the whole of diastole, the first sound becomes louder, and the second disappears. In the stage of decompensation the murmur disappears.

Chief Signs.—History of tonsillitis, rheumatic fever, chorea; presystolic apical thrill; accentuation of the second pulmonic sound; short, snappy first sound; small, thready pulse; hypertrophy of the left auricle and right ventricle.

Cardiac Dilatation.—*Characteristics.*—In left ventricular dilatation a soft blowing systolic murmur of relative mitral regurgitation is frequently audible at the apex, and the aortic area, in addition, is apt to be the site of a systolic and diastolic murmur due to disease or dilatation of the aortic valve.

Chief Signs.—(In general) feeble, wavy, precordial impulse; ill-defined, displaced apex beat; small, rapid, irregular pulse; weak but sharp first sound with an enfeebled second sound; signs of failing compensation.

Chronic Myocarditis.—*Characteristics.*—The systolic murmur of a relative mitral leakage is not uncommonly audible at the apex from stretching of the valve ring.

Chief Signs.—History of chronic intoxications or infectious diseases (including syphilis) or previous attacks of decompensation; may be precordial pain; feeble, irregular pulse; dyspnea on exertion; arteriosclerosis.

Acute Simple Endocarditis.—*Characteristics.*—The systolic murmur of mitral regurgitation (see above) may develop during the course of this affection, but usually the bruit is due to roughening of the valve by vegetations. It may be very faint, and repeated examination may be necessary to determine its presence. It is apt to change in quality and intensity from day to day. The presence of a murmur is the determining factor in most cases.

Chief Signs.—Presence or history of infection (especially rheumatic); moderate fever; palpitation; precordial distress; dyspnea; rapid pulse; accentuation of the second pulmonic sound; gradually developing impurity of the cardiac sounds; leukocytosis.

Ulcerative Endocarditis (*Malignant or Infective Endocarditis*).—*Characteristics.*—The cardiac form is the one which is most easily recognized, and usually develops in a patient already suffering with chronic endocarditis. If in the course of an obscure infection a murmur due to chronic valvulitis undergoes changes or, in addition to the mitral murmur, a diastolic murmur at the aortic area develops during the course of the disease, it strongly indicates infectious endocarditis. The sudden appearance of a musical murmur is also very suggestive. One of the characteristics of a murmur occurring in malignant endocarditis is its

variable character; it is apt to change both in quality and intensity from day to day.

Chief Signs.—See page 33.

Acute Myocarditis.—*Characteristics.*—A systolic apical murmur of relative mitral leakage may be present. It is quiet, poorly conducted, evanescent, and may or may not be accompanied by accentuation of the second pulmonic sound.

Chief Signs.—Existence of an acute febrile affection; dyspnea; pallor; vomiting; precordial oppression; rapid, low-tension pulse; muffled impurity of the cardiac sounds.

Aortic Regurgitation.—*Characteristics.*—The presystolic murmur of Flint is sometimes heard at the mitral area in this lesion (50 per cent). It differs from the murmur of mitral stenosis in that it is less intense, rumbling and ingravescent, and is not followed by a snappy first sound. It is always accompanied by the diastolic murmur of aortic regurgitation.

Chief Signs.—Arterial throbbing; tumultuous apex beat; galloping radial and visible capillary pulses; left ventricular hypertrophy; diastolic aortic murmur; large pulse-pressure.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics.*—On auscultation murmurs are usually heard over the heart, *viz.*, a loud apex systolic, and loud bruits at the base and over the manubrium.

Chief Signs.—See page 450.

Effort Syndrome (*Neurocirculatory Asthenia; Soldier's Heart*).—*Characteristics.*—Systolic murmurs are very frequent. The first sound may be roughened and a presystolic murmur simulated.

Chief Signs.—See page 444.

Pervious Interventricular Septum.—*Characteristics.*—A loud harsh systolic murmur with maximum intensity in the fourth left interspace between the sternum and the midclavicular line may be heard running through the whole cardiac cycle. When accompanied by pulmonary stenosis (see page 455) the pulmonary murmur overshadows the septal murmur.

Chief Signs.—Early appearance; absence of rheumatic history; dyspnea on exertion; clubbed fingers; may be transient attacks of cyanosis on exertion; right ventricular hypertrophy.

Less Common Causes.—Coronary thrombosis; chronic adhesive pericarditis; defect of the auricular septum; transposition of the great vessels.

AORTIC AREA MURMURS

These murmurs are heard most intensely at the aortic area, which is situated at the sternal end of the second right intercostal space and costal cartilage. They are systolic or diastolic, the former indicating obstruction, the latter incompetence.

Aortic Regurgitation.—*Characteristics.*—A diastolic murmur, usually soft and blowing and of tolerably high musical pitch, is audible at the base of the heart, whence it is transmitted downward over the precordia. The murmur is usually most distinct at about the middle of the sternum on a level with the third rib and is usually propagated downward along the left side of the sternum and towards the apex. It usually replaces the aortic second sound.

Chief Signs.—May be history of syphilis; precordial pulsations; forcible apex beat; increased cardiac dulness; visible arterial pulsation; Corrigan pulse; capillary pulse; may be headache; high systolic, low diastolic pressure; positive Wassermann.

Chronic Aortitis (*Atheroma of the Aorta; Syphilitic Aortitis*).—*Characteristics.*—There is a systolic basic murmur, usually loud, rough, and rasping, transmitted into the carotid arteries, but not often accompanied by a thrill.

Chief Signs.—Arteriosclerotic hypertrophy of the left ventricle or history of syphilis; ringing second aortic sound; arteriosclerosis or evidence of syphilis.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—A systolic bruit may be generated within the aneurysmal sac but is of minor import. A diastolic murmur of aortic regurgitation is frequently audible.

Chief Signs.—Heaving or expansile pulsation; palpable diastolic shock; accentuation of the second aortic sound; thrill; tracheal tug; unequal radial pulses; pressure symptoms (hoarseness, cough, dysphagia, pain); transverse dulness at the second interspace; x-ray.

Dilatation of the Aorta (*Dilatation Aneurysm*).—*Characteristics.*—An aortic systolic murmur may be present, which is conducted upward into the neck, and which may be accompanied by a corresponding thrill. The second sound is either accentuated or of a tambourlike quality or is modified by a bruit of concomitant aortic leakage.

Chief Signs.—Systolic pulsations and unnatural dulness over the ascending aorta, and throbbing in the suprasternal notch; pulse of fair volume; blood-pressure usually below 130; x-ray.

Cardiac Dilatation.—*Characteristics.*—In left ventricular dilatation a diastolic aortic murmur of relative aortic incompetence may be present. A systolic murmur may also be heard.

Chief Signs.—See page 452.

Acute Syphilitic Aortitis.—*Characteristics.*—A loud aortic systolic murmur is frequently heard.

Chief Signs.—Presence or history of syphilis; acute paroxysmal attacks of substernal pain which may be anginoid in character; agonizing paroxysms of dyspnea, palpitation, and tachycardia; piping and mucous râles; may be dulness beneath the manubrium; visible neck pulsations; positive Wassermann; x-ray.

Aortic Stenosis.—*Characteristics.*—A systolic aortic murmur, of loud, rough and rasping quality is transmitted up into the carotid arteries, in some instances over the entire precordia; the aortic first sound may be masked by the murmur. The second aortic sound is muffled and enfeebled and may be replaced by a diastolic bruit.

Chief Signs.—Systolic basic thrill; left ventricular hypertrophy; slow prolonged pulse; impaired aortic second sound; latent subjective symptoms, the first often being dizziness and faintness.

Less Common Causes.—Anemia (functional murmur); acute (infectious) aortitis; infectious endocarditis.

PULMONIC AREA MURMURS

These murmurs are heard most intensely at the pulmonic area, which is at the sternal end of the second left intercostal space. They are either systolic or diastolic, and are usually systolic and functional, very rarely organic. Functional systolic hemic murmurs are common in this area, accompanying convalescence from fevers, cachexia, wasting diseases, and hemorrhage.

Anemia (*In General, Especially Chlorosis*).—*Characteristics*.—A systolic murmur may be heard at the second left interspace, soft and blowing in character, not transmitted, and of transient duration (hemic murmur). The murmur is often attended with a venous hum in the neck and accentuation of the pulmonic second sound.

Chief Signs.—Pallor; dyspnea on exertion; weakness; examination of the blood, showing the type of anemia.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics*.—A functional systolic murmur at the pulmonic area is common in all stages, but particularly in the later stages of the disease.

Chief Signs.—See page 412.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics*.—A loud bruit at the base and also apex systolic murmurs are usually heard.

Chief Signs.—See page 450.

Mitral Stenosis.—*Characteristics*.—Sometimes the murmur of relative pulmonary regurgitation ("murmur of high pressure in the pulmonary artery," Graham Steele murmur) is heard. It is an evanescent diastolic murmur heard at the pulmonic area, short and high-pitched, produced most readily by prolonged holding of the breath.

Chief Signs.—See page 452.

Patent Foramen Ovale.—*Characteristics*.—There may be a systolic, diastolic, or presystolic murmur, best heard in the third interspace to the left of and close to the sternum. Many cases give no signs or symptoms.

Chief Signs.—In well-marked cases, cyanosis, dyspnea (often paroxysmal), cold extremities, inertia, clubbed fingers.

Pulmonary Stenosis.—*Characteristics*.—A systolic murmur, ordinarily intense, rough, and superficial is heard in this rare condition (usually congenital), with maximum intensity in the second and third interspaces to the left of the sternum and is propagated upward toward the left clavicle but not into the arterial trunks of the neck. Murmurs of other congenital defects may be audible.

Chief Signs.—Presence from birth; cyanosis; dyspnea; venous turgescence; thrill in the pulmonic area; enfeeblement of the pulmonic second sound; right ventricular hypertrophy; clubbed fingers and toes.

Persistence of the Ductus Arteriosus.—*Characteristics*.—A late systolic murmur may be audible at the pulmonic area, propagated toward the apex. It is of high pitch, considerable intensity (especially during inspiration), and prolonged. The murmur of pulmonary stenosis may be added when that lesion is associated.

Chief Signs.—Early appearance; cyanosis and dyspnea in some cases; clubbed fingers; right ventricular hypertrophy; thrill; accentuated second pulmonic sound unless stenosis is present also.

Pulmonary Regurgitation.—*Characteristics.*—A soft diastolic murmur in the pulmonic area is heard in this rare condition, propagated downward along the left sternal margin toward the apex.

Chief Signs.—Enfeeblement of the second pulmonic sound without alteration of the second aortic sound; right ventricular hypertrophy; frequent small pulse; absence of the vascular features of aortic insufficiency.

Stenosis of the Pulmonary Artery.—*Characteristics.*—A rough, intense systolic murmur is heard at the pulmonic area in this very rare condition, propagated up toward the left clavicle.

Chief Signs.—Systolic pulsation in the pulmonary area; impaired resonance in the pulmonic area; accentuated second pulmonic sound; rapid small pulse; presence of cirrhotic or tuberculous process of the lung as the cause.

Less Common Causes.—Addison's disease.

TRICUSPID AREA MURMURS

These murmurs are heard most intensely at the tricuspid area, which overlies the lower end and right half of the sternum from the fourth to the sixth or seventh costal cartilage. They are presystolic (very rare) or systolic.

Relative Tricuspid Regurgitation.—*Characteristics.*—A soft blowing systolic murmur is heard most distinctly over the lower part of the sternum, which, though not propagated along hard and fast lines, is evident over a triangular region lying between the tricuspid area, the right midaxillary line, and the manubrium.

Chief Signs.—Systolic jugular and hepatic pulse; dyspnea or orthopnea; cyanosis; diffuse apex beat; enlarged liver; enfeeblement of the second pulmonic sound; enlargement of the heart; pulmonary engorgement; edema and ascites; epigastric pulsation; small, weak, often irregular pulse; may be other murmurs of mitral disease.

Organic Tricuspid Regurgitation.—*Characteristics.*—In this uncommon lesion a rough systolic murmur is heard as in relative tricuspid regurgitation (see above).

Chief Signs.—Early appearance, or history of infectious disease; systolic jugular and hepatic pulse; cyanosis; enfeeblement of the second pulmonic sound; enlargement of the right heart; evidences of venous obstruction.

Tricuspid Stenosis.—*Characteristics.*—A short, rough, presystolic murmur ending in a sharp first sound, and restricted to the tricuspid area, is heard in this very rare lesion.

Chief Signs.—Right ventricular hypertrophy; frequently coexisting mitral obstruction; cyanosis; edema; hepatic enlargement; turgid, pulsating jugulars; presystolic thrill over the ensiform cartilage.

CARDIORESPIRATORY MURMURS

These murmurs may simulate true cardiac murmurs, but their intensity is dependent upon the phases of respiration. In general the cardiopulmonary murmur is systolic in time, restricted to a limited area, but not to a definite cardiac area, intensified by deep inspiration and by forward inclination of the trunk, and variously modified by cough and by forced respiration. They are generally loudest near the

cardiac apex and along the left border of the heart, but they may be heard along the right border, in the scapular region, and elsewhere. Such sounds are sometimes audible in perfectly healthy subjects, especially in thin-chested, and nervous persons, and are caused by the forcible expulsion of air from a lappet of lung compressed between the heart and the chest-wall. They resemble short, subdued puffs and whiffs of air, but may be relatively prolonged, loud and rasping. The importance of these murmurs is slight and lies chiefly in the fact that they may be confused with endocardial murmurs.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics*.—In early cases these murmurs may often be heard, best during inspiration and in the anterolateral regions of the chest. They are probably even more common in the moderately advanced stages of the disease.

Chief Signs.—See page 412.

Effort Syndrome (*Neurocirculatory Asthenia; Soldier's Heart*).—*Characteristics*.—A short, high-pitched, rather superficial whiff may be noted at times, audible only (or most audible) in the inspiratory period of respiration.

Chief Signs.—Breathlessness; fatigue and exhaustion; pain; palpitation; faintness; giddiness; headache; sweating; blueness or mottling of the hands; abnormally rapid pulse on exertion or emotion; increased intensity of the cardiac sounds.

Less Common Causes.—Hypertrophic emphysema; pleurisy with effusion (massive); external pericarditis.

PRECORDIAL FRICTION SOUND

Friction sounds in the region of the heart are either pericardial or pleuropericardial. It is important to differentiate the two, as the former is always indicative of pericarditis. A very rare condition, in which there is both fluid and air in the pericardial sac (hydropneumopericardium), gives rise to a mélange of splashing, tinkling, gurgling, churning sounds, unmistakably produced by movements of the heart. While not a friction sound, it is mentioned here for the sake of completeness; it is, in reality, a pericardial succussion sound.

Acute Fibrinous Pericarditis.—*Characteristics*.—The friction sound is most distinctive. It is double, corresponding to systole and diastole, but the to-and-fro murmur usually outlasts the time occupied by the first and second sound. It is sometimes single or at times triple. The sounds have a peculiar rubbing, grating quality, and are superficial and intensified by pressure with the stethoscope. They are best heard over the right ventricles, sometimes at the base, occasionally at the apex. They may or may not be transmitted up and down the sternum, they vary in position and quality, and they disappear at times but are always present at some time during the disease.

Chief Signs.—History or presence of rheumatic fever, pneumonia, septicemia, chronic debilitating disease; may be pain, though often absent; fever; may be dyspnea, pallor, pinched expression, feeble, rapid pulse.

Chronic Adhesive Pericarditis (*Adherent Pericardium*).—*Characteristics*.—Friction sounds are commonly heard over the anterior pulmonary borders surrounding the body of the heart when there are extensive external adhesions. These are pleuropericardial sounds and while acoustically similar to the pericardial rub, bear a

definite relation to the cardiac impulse and to the respiratory movements, being intensified during expiration and diminished on inspiration. In some cases the presystolic rumble of mitral stenosis is simulated, but not with any degree of constancy.

Chief Signs.—See page 438.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics.*—When the pleura in the region of the pericardium is involved pleuropericardial friction sounds are commonly heard.

Chief Signs.—See page 412.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—Pleuropericardial friction sounds are heard when the lappet of lung over the heart is involved, and sometimes with the friction sound a loud systolic click is noted.

Chief Signs.—See page 412.

Acute Pleurisy.—*Characteristics.*—Pleuropericardial friction sounds generated by the cardiac impact are audible when the pleural surfaces adjacent to the pericardium are roughened. They are rarely heard when the patient is not breathing.

Chief Signs.—See page 369.

Coronary Thrombosis.—*Characteristics.*—The appearance of a pericardial friction rub following a sudden attack of substernal or precordial pain with collapse is very suggestive, and is present in nearly half of the cases.

Chief Signs.—Sudden onset with substernal pain of lengthy duration; collapse; dyspnea; cardiac enlargement; low blood-pressure; fever; leukocytosis (11,000 to 35,000); electrocardiography (inverted T wave).

Less Common Causes.—Acute aortitis (basal pericardial friction occasionally); mediastinitis; perihepatitis; rupture of the ventricle.

PALPITATION OF THE HEART

Palpitation is a sense of fluttering or sinking in the region of the heart, or of a throbbing against the chest, the patient being morbidly conscious of the heart beats. The term is properly limited, however, to irregular or forcible action of the heart perceptible to the individual. It often indicates increased excitability of the nervous system, and is, in fact, usually a purely nervous phenomenon. Females are more liable to the affection than males. It may be a marked feature at the time of puberty, of the menopause, and occasionally during menstruation. Emotional excitement or stress, excessive muscular exertion, and the use of coffee, tobacco, tea, and alcohol, are common causes. It may occur as a sequel of the acute fevers. A diffuse flushing of the skin may accompany the palpitation, together with a subjective sensation of weakness, and the passage of a large quantity of urine may follow the attack.

Dyspepsia.—*Characteristics.*—Palpitation occurs in dyspeptic states, especially those associated with flatulence and with stoutness from lack of exercise.

For causes of Dyspepsia, see page 487.

Neurosis.—*Characteristics.*—Cardiovascular symptoms may be most distressing. These include palpitation, irregular and rapid heart action, and pains and oppressive feelings in the cardiac region.

Chief Signs.—See page 450.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics*.—Annoying attacks of palpitation are common.

Chief Signs.—See page 450.

Effort Syndrome (*Neurocirculatory Asthenia; Soldier's Heart*).—*Characteristics*.—Palpitation is an outstanding feature, and is one of the many subjective symptoms of the condition.

Chief Signs.—See page 457.

Chronic Secondary Anemia.—*Characteristics*.—Palpitation is the outstanding subjective symptom in some cases.

Chief Signs.—See page 395.

Chlorosis.—*Characteristics*.—Palpitation of the heart occurs on exertion, and may be the most distressing symptom of which the patient complains.

Chief Signs.—See page 395.

Pernicious Anemia.—*Characteristics*.—Marked palpitation may be present as in other types of anemia, induced by the slightest exertion and emotion, and accompanied by faintness and breathlessness.

Chief Signs.—See page 395.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics*.—As a chronically diseased heart begins to decompensate, attacks of palpitation, or an annoying sense of fluttering of the heart may occur, together with transient attacks of faintness or dizziness, dyspnea, or a sense of precordial oppression upon exertion, and throbbing sensations in the head and neck.

Chief Signs.—See page 449.

Chronic Endocarditis (*Valvular Disease*).—*Characteristics*.—An annoying palpitation and throbbing sensation is very often associated with precordial oppression and dyspnea upon exertion. These symptoms become aggravated when decompensation occurs.

For the symptoms of the various valvular lesions, see "Cardiac Murmurs," page 451.

Chronic Myocarditis (*Cardiosclerosis*).—*Characteristics*.—Palpitation is a frequent symptom.

Chief Signs.—See page 452.

Paroxysmal Tachycardia.—*Characteristics*.—Palpitation, a feeling of discomfort or oppression in the precordia, and weakness are the most common subjective symptoms, and are often worse just at the end of the attack.

Chief Signs.—See page 448.

Acute Simple Endocarditis.—*Characteristics*.—Palpitation may be a marked feature and is given importance by some authorities.

Chief Signs.—See page 452.

Arteriosclerosis.—*Characteristics*.—Palpitation occurs in those cases in which myocardial changes have occurred.

Chief Signs.—See page 450.

Less Common Causes.—Chronic interstitial nephritis (when the myocardium is involved); chronic pulmonary tuberculosis; epilepsy; tabes dorsalis; amenorrhea; angina pectoris; ascites; large ovarian cyst; pregnancy; pseudo-angina pectoris; spermatorrhea; large abdominal tumor; tympanites; toxic effect of cocain, digitalis, thyroid extract, and morphin; mediastinal tumor; mediastinitis; aneurysm of

the arch of the aorta; chronic adhesive pericarditis; acute pericarditis; congenital heart disease; hypertrophic emphysema; chronic bronchitis; fibroid phthisis; large pleural effusion; Stokes-Adams syndrome; scurvy.

HEARTBURN

(*Pyrosis; Cardialgia*)

Heartburn is a burning sensation, or a feeling of distress or oppression, which may amount to actual pain, localized and felt in the epigastrium, beneath the sternum, or in the precordial region. It occurs after eating and is indicative of functional or organic disease of the gastro-enteric tract and regurgitation of hydrochloric or organic acids into the esophagus.

Hyperacidity.—*Characteristics.*—Heartburn occurs from one to three hours after eating, at the height of digestion, commonly associated with acid eructations.

Chief Signs.—Occurrence in neurotic individuals and chlorotic girls; unimpaired nutrition; occurrence of heartburn at the height of digestion; gastric analysis (total acidity high, 75 to 80 instead of 40 to 60); elimination of organic lesions.

Acute Gastritis.—*Characteristics.*—Heartburn occurs in the severe types.

Chief Signs.—Sudden onset with chill and fever; nasty taste in the mouth; furred tongue, thirst, anorexia; symptoms of collapse; vomiting of food, then bile; acid eructations; epigastric tenderness; abdominal distention; duration one to three days.

Chronic Gastritis.—*Characteristics.*—Heartburn of varying severity occurs after eating.

Chief Signs.—See page 467.

Pregnancy.—*Characteristics.*—A gnawing or burning pain may be complained of on an empty stomach, relieved by food.

Chief Signs.—Amenorrhea; morning sickness; pelvic and abdominal examination (soft cervix, large uterus, etc.).

Gastric Ulcer.—*Characteristics.*—A paroxysmal cardialgia induced by food and recurring during digestion is a common complaint.

Chief Signs.—Pain in the epigastrium related to food; epigastric tenderness; vomiting; hematemesis; increased total acidity and free hydrochloric acid (usually); x-ray (showing ulcer crater).

Duodenal Ulcer.—*Characteristics.*—Heartburn and flatulence are frequent symptoms.

Chief Signs.—Pain in the epigastrium when the stomach is empty (two hours after food and at night); relief by eating and by soda; blood in the feces (occult blood or tarry stools); epigastric tenderness; hyperacidity; periods of remission; x-ray (defective filling of the duodenal cap and hyperperistalsis).

Carcinoma of the Stomach.—*Characteristics.*—Heartburn may be a feature of the dyspepsia preceding the development of the cancer, but is an uncommon feature of the cancer itself.

Chief Signs.—Anorexia; loss of weight and strength; anemia; constant gnawing epigastric pain; nausea and vomiting; mass later; gastric analysis (absence of free hydrochloric acid; Boas-Oppler bacilli, sarcinæ, bacteria, blood); x-ray (filling defect).

Gastric Dilatation.—*Characteristics.*—Heartburn may occur, with distress and uneasiness in the region of the stomach.

Chief Signs.—Vomiting at intervals of large quantities of fluid and food of dark gray color (separating into three layers); wasting; visible dilatation and peristalsis; splashing; tetany; x-ray (large stomach with pyloric obstruction or only atony).

Epilepsy.—*Characteristics.*—A sensation of heartburn with palpitation may constitute the aura.

Chief Signs.—See page 684.

GIRDLE SENSATION

The term girdle sensation is applied to a subjective sensation as of a constricting band around the trunk. The band may be narrow or broad, and may be referred to any level of the thorax or abdomen.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—Superficial tenderness and feelings of constriction by hot or painful bands, of which the girdle sensation is the most common example, are among the early subjective sensory symptoms of tabes.

Chief Signs.—History of syphilis (six to fifteen years previous); lightning pains; absence of the knee-jerks; Argyll-Robertson pupils; Romberg's sign; later ataxic gait; sensory changes; trophic lesions; hypotonia; visceral crises; difficulty in micturition; optic atrophy; ocular palsies; positive Wassermann; spinal fluid examination (positive Wassermann, increased globulin, lymphocytosis, colloidal gold reaction, tabetic curve).

Acute Transverse Myelitis (*Thrombocyphilitic; Infective*).—*Characteristics.*—A girdle sensation may occur early, and when the lesion is in the thoracic region the sensation is usually felt between the ensiform cartilage and the umbilicus.

Chief Signs.—See page 620.

Less Common Causes.—Chronic compression myelitis (tumor of the cord, caries, trauma); multiple sclerosis; spastic paraplegia (combined sclerosis); bilateral intercostal neuralgia; meningitis (spinal syphilitic); vomiting (strain of the diaphragm).

THE ABDOMEN

SYMPTOMS	PAGE
General Abdominal Pain	463
General Abdominal Tenderness	465
Pain in the Epigastrium	466
Tenderness in the Epigastrium	470
Pain in the Right Hypochondrium	471

Tenderness in the Right Hypochondrium	473
Pain in the Left Hypochondrium	473
Tenderness in the Left Hypochondrium	474
Pain in the Umbilical Region	475
Tenderness in the Umbilical Region	476
Pain in the Iliac and Inguinal Regions (Right or Left)	476
Tenderness in the Iliac and Inguinal Regions (Right or Left)	481
Pain in the Hypogastrium and Pelvis	482
Tenderness in the Hypogastrium	486
Dyspepsia (Indigestion)	487
Acute Vomiting (Acute Emesis, Including Nausea)	490
Chronic Vomiting (Chronic Emesis, Including Nausea)	494
Hematemesis (Vomiting of Blood)	498
Regurgitation	501
General Abdominal Swelling	502
Swellings in the Abdominal Wall	505
Swelling in the Epigastrium	506
Swelling in the Right Hypochondrium	507
Swelling in the Left Hypochondrium	509
Swelling in the Umbilical Region	509
Swelling in the Flank or Lumbar Region Anteriorly (Iliocostal Space, Right or Left)	511
Swelling in the Iliac Region (Right or Left)	512
Swelling in the Hypogastrium	514
Ascites	515
Tympanites (Meteorism; Gaseous Distention of the Abdomen)	518
Enlargement of the Liver (Hepatomegaly)	520
Splenomegaly	523
Enlargement of the Kidney	526
Retracted Abdomen (Scaphoid Abdomen)	528
Retraction of the Abdomen on Inspiration	529
Rigidity of the Abdomen (General or Local)	529
Enlarged Veins of the Abdominal Wall	531
Visible Peristalsis	532
Oozing or Discharge from the Navel	534
Absence of the Abdominal Skin Reflexes	534
Swelling in the Inguinal Region or Groin	535
Enlarged Glands of the Groin	537
Skin Affections of the Abdomen	538

See also "Acute Constipation," page 678; "Chronic Constipation," page 679; "Acute Diarrhea," page 700; "Chronic Diarrhea," page 702; "Blood in the Stools," page 803; "Mucus in the Stools," page 806; and "Pus in the Stools," page 808.

GENERAL ABDOMINAL PAIN

Generalized abdominal pain is not as common as localized pain.

Labor (Parturition).—*Characteristics.*—The pain usually begins in the sacral region and then slowly passes to the abdomen and to the thighs. The pains are periodic, at first irregular, nagging, and weak, but becoming progressively more regular, stronger, longer, and more frequent. They are crampy in character, and are described as "bearing-down pains."

Chief Signs.—History and signs of pregnancy; palpation, revealing contraction of the uterus with each pain; mucous and bloody vaginal discharge; digital vaginal examination, revealing dilatation of the cervical os.

Acute General Peritonitis.—*Characteristics.*—The pain is diffuse, often sudden, and is increased by movement and pressure. At complete rest it may be slight. While usually widespread it may be referred to the umbilicus. The abdomen is distended, tympanitic, rigid, immobile, and extremely tender. Later there is effusion.

Chief Signs.—Usually history or evidence of some primary infectious lesion (perforated ulcer, appendix, gall-bladder, gangrenous gut, pelvic infection); sudden onset with vomiting and shock; fever; rapid pulse, at first "wiry," later "thready"; constipation, rarely diarrhea; facies hippocratica; dorsal decubitus with the knees drawn up; shallow costal respiration; collapse; oliguria; marked leukocytosis.

Acute Enterocolitis (*Acute Gastro-Enteritis; Acute Catarrhal Enteritis; Enterocolitis or Colitis; Acute Duodenitis, Jejunitis, Ileitis, or Ileocolitis; Acute Diarrhea; Acute Intestinal Catarrh; Acute Intestinal Indigestion; Cholera Infantum; Acute Enteric Intoxication; Cholera Morbus*).—*Characteristics.*—The pain and other symptoms may vary according to the severity of the infection or irritation, to the portion of the bowel involved, and to the degree of involvement. There may be only slight abdominal discomfort or severe colicky pain. If the small intestine is involved, there is often diffuse tenderness; if the colon is mainly involved there may be tenderness along the course of the large bowel and pain and tenesmus with the motions, while between movements there may be little pain.

Chief Signs.—Acute onset; may be nausea and vomiting; anorexia, furred tongue, thirst; may be fever; may be collapse; abdominal distention and tympanites of varying degree; borborygmi; diarrhea (more marked in colon involvement); offensive soft or liquid stools (mucus and blood in colitis, lighter colored in enteritis).

Chronic Enterocolitis (*Chronic Intestinal Catarrh; Chronic Catarrhal Enteritis; Chronic Diarrhea; Chronic Intestinal Indigestion; Atrophic and Hypertrophica Enterocolitis*).—*Characteristics.*—There may be periodic, more or less frequently recurring attacks of colicky pain with diarrhea and flatulence.

Chief Signs.—Chronicity; variability of symptoms, more pronounced when diarrhea occurs; weakness and depression; alternate constipation and diarrhea; sticky, slimy, possibly blood-streaked stools; abdominal distention (enteritis); abdominal flaccidity and colonic tenderness (colitis); sigmoidoscopy.

Ulcerative Colitis.—*Characteristics.*—There is usually severe, diffuse, colicky pain, occurring, as a rule, with the motions. Tenesmus may accompany the diarrhea. Some passages, however, occur without pain.

Chief Signs.—Diarrhea with offensive stools containing blood, pus, mucus, and shreds; abdominal distention and colonic tenderness; tongue clean or only slightly furred; temperature variable (high or low); rapid pulse; wasting, debility, anemia; rectal examination (ulceration); chronicity with intermissions; x-ray.

Mucomembranous Colitis (*Mucous Colitis*).—*Characteristics.*—Paroxysmal attacks of diffuse colicky pain occur, followed by the prompt expulsion of the characteristic feces. The pain may be exceedingly violent. Severe tenesmus accompanies the passage of membranes.

Chief Signs.—Chronicity with periods of freedom; poor health; obstinate constipation with attacks of diarrhea; expulsion of hard feces bearing longitudinal bands of thick, tenacious mucus and possibly sheets of mucus or even casts of the bowel; general nervous symptoms; visceroptosis; hemorrhoids.

Bacillary Dysentery.—*Characteristics.*—There is diffuse abdominal pain with tormina and tenesmus, accompanying the passages. The pain may be only slight between motions, but there is often extreme tenderness. The abdomen is retracted but not rigid.

Chief Signs.—Sudden onset; frequent small stools of almost pure blood and some mucus; variable temperature (high or low); pulse rapid and small; dry, inelastic skin; vomiting; muscular cramps; collapse; bacteriological examination of the feces (*Shiga-Flexner bacillus*); agglutination test.

Amebic Dysentery.—*Characteristics.*—As in bacillary dysentery (see above).

Chief Signs.—Occurrence mainly tropical; symptoms as in bacillary dysentery, but with a tendency to chronicity; fever often absent; may be liver abscess or perforation and peritonitis; discovery of *Entamoeba histolytica* and cysts in the stools.

Food-Poisoning.—*Characteristics.*—There is general abdominal pain of a colicky nature, with tenesmus. The abdomen is usually tender but not rigid.

Chief Signs.—Occurrence in several persons who have consumed the same food; sudden onset (three to thirty hours after eating); nausea and vomiting; diarrhea without mucus; headache; cold sweats; variable temperature; bacteriological examination of the stools (*Bacillus enteritidis* of Gaertner, *B. suipestifer*, or *B. ærtrycke*); serum tests with recognized strains.

Acute Intestinal Obstruction (*Intussusception; Volvulus; Bands; Strangulated Hernia*).—*Characteristics.*—Abdominal pain is early, often sudden, severe, at first colicky, then continuous.

Chief Signs.—Early and constantly repeated vomiting (not so early if the colon is obstructed), often copious, first of the stomach contents, then of bile, finally of feces; collapse, with low temperature, rapid feeble pulse; cold sweats, dry tongue, and thirst; absolute constipation after the initial emptying; abdomen at first unchanged, later distended and doughy or rigid; variable tenderness, often slight; may be visible peristalsis; may be sausage-shaped tumor in intussusception.

Acute Appendicitis.—*Characteristics.*—The pain is occasionally at first diffuse, “all over the abdomen,” though this is more usual in cases with perforation, and only later is localized in the right iliac fossa. It may become general again if peritonitis supervenes.

Chief Signs.—See page 476.

Tuberculous Peritonitis.—*Characteristics.*—Frequently pain is the symptom which leads the patient to seek advice. It may be present from the very beginning, it may arise after malaise and gastro-intestinal disorder have existed for some time, but sooner or later it will develop. There may be only occasional colicky pain. The abdomen is distended and tender.

Chief Signs.—Occurrence especially in children; usually insidious onset, sometimes acute; chronicity; weakness, pallor, loss of weight; fever variable, often slight; looseness of the bowels; shifting dullness in the flanks with greatly distended abdomen (tyimpanites), or doughy abdomen with moderate distention, or palpable tumor masses; may be relative lymphocytosis; guinea-pig inoculation with the aspirated fluid.

Chronic Lead Poisoning (Plumbism; Saturnism).—*Characteristics.*—The most common type is the colic (lead or painter’s colic). The pain is diffuse, paroxysmal, and colicky, increased by pressure, and of a twisting or sawing character radiating from the umbilicus. The abdomen is hard and retracted, and constipation is obstinate.

Chief Signs.—Occupation; often pallor; constipation; general lassitude; blue line on the gums; may be wrist-drop; basophilic degeneration and stippling of the red cells with anemia; arteriosclerosis; presence of lead in the urine and feces; may be encephalopathy.

Henoch’s Purpura.—*Characteristics.*—Attacks of diffuse colicky pain, often severe, occur from time to time. These attacks may appear for months before the purpuric rash develops. Intussusception may be simulated and occasionally occurs in this condition.

Chief Signs.—Occurrence in children; vomiting with the colic; diarrhea or constipation; may be melena; purpuric rash (urticaria and erythema may coexist); tendency to relapses.

Less Common Causes.—Acute metallic poisoning (arsenic and mercury); visceroptosis; chronic peritonitis (other than tuberculous); Asiatic cholera; intestinal concretions; nervous enteralgia; abdominal neuralgia; typhoid fever; chronic intestinal obstruction; “hysterical” peritonitis; tabes dorsalis; achylia gastrica; intestinal worms; embolism and thrombosis of the mesenteric vessels; rupture of an abdominal aneurysm; Hirschsprung’s disease; rupture of the intestine; acute osteomyelitis of the dorsal and lumbar vertebrae; tuberculosis of the spine (chronic bilateral bellyache in children).

GENERAL ABDOMINAL TENDERNES

Acute General Peritonitis.—*Characteristics.*—Even in the early stages the sensitiveness of the abdomen may be extreme and the abdominal muscles are often rigidly contracted. The characteristic attitude of the patient is assumed to relieve

pain and tenderness; he lies upon the back with the shoulders raised and the thighs drawn up.

Chief Signs.—See page 463.

Toxic Gastritis.—*Characteristics.*—The abdomen is distended, tender, and painful on pressure.

Chief Signs.—See page 468.

Acute Intestinal Obstruction (*Intussusception; Volvulus; Bands; Strangulated Hernia*).—*Characteristics.*—Early in the case there is neither tenderness nor rigidity; as paralysis begins, tenderness develops. When tenderness exists, tapping is more apt to cause pain than pressure; in fact, early in the course, pressure may actually afford some relief. When peritonitis arises, of course, tenderness becomes acute and rigidity develops.

Chief Signs.—See page 464.

Tuberculous Peritonitis.—*Characteristics.*—The abdomen is tender, though not extremely so.

Chief Signs.—See page 465.

Acute Enterocolitis.—*Characteristics.*—In severe cases tenderness may be diffuse, being not only present in the periumbilical region, but well marked out into the flanks and along the course of the great bowel.

Chief Signs.—See page 463.

Less Common Causes.—Rupture of the intestine; food-poisoning.

PAIN IN THE EPIGASTRIUM

(See also, "Pain in the Sternal Region," page 365.)

Hyperacidity (*Hyperchlorhydria*).—*Characteristics.*—There is burning pain or discomfort in the epigastrium in the late period of digestion, relieved temporarily by the taking of food, fluid, alkalies, or vomiting.

Chief Signs.—Occurrence in well-nourished persons of neurotic temperament; recurrent attacks at intervals; no loss of appetite; vomiting; acid eructations; constipation; gastric analysis (excess of hydrochloric acid); exclusion of organic disease.

Duodenal Ulcer.—*Characteristics.*—Epigastric pain occurs late in digestion, two or three hours after eating and at night, and is relieved by food, fluid, and soda, but not by vomiting. It is located in the right of the epigastrium and above the umbilicus, radiating to the umbilicus and to the right side, but never to the subscapular region.

Chief Signs.—Long periods of remission; tarry feces or occult blood in the stools; dyspepsia; hyperacidity and hypermotility of the stomach; may be rigidity of the right rectus and tenderness above and to the right of the umbilicus; slight weight loss; may be anemia; oral sepsis common; x-ray (filling defect in the duodenal cap).

Gastric Ulcer.—*Characteristics.*—A boring pain occurs just below the ensiform soon after eating. It is circumscribed, of variable intensity, and persists while food is in the stomach, being relieved by vomiting and the passage of food through the pylorus. It may go straight through to the back or spread around the left side with pain in the region of the tenth dorsal vertebra. In chronic ulcers the

pain may be lower in the epigastrium and more diffuse. It may be a burning or only a heavy sensation, and there may be severe paroxysms. It is increased by pressure, however slight. Pain is rare at night or on an empty stomach. There is irregular relief by food and soda. A sharply defined area of tenderness is present in the epigastrium. There may be freedom for weeks and then recurrence, but this is not as noted as in duodenal ulcer.

Chief Signs.—Vomiting; hematemesis; anemia; some wasting; good appetite (but afraid to eat); dyspepsia; gastric analysis (usually hyperacidity); x-ray (filling defect of the stomach wall).

Carcinoma of the Stomach.—*Characteristics.*—Epigastric pain is an early symptom. It may be referred to the shoulder and back, is worse after food, increased by pressure, and only partly relieved by vomiting. It is dragging in character, less intermittent than in gastric ulcer, and rarely paroxysmal. There is usually an area of superficial tenderness between the nipple and the umbilicus, and between the fifth and twelfth dorsal spines.

Chief Signs.—Occurrence in late middle life; dyspepsia, anorexia (especially for meat); nausea and vomiting; may be hematemesis; emaciation; anemia (yellow tint); may be palpable tumor; may be enlarged glands in the neck and left axilla; gastric analysis (absence of free hydrochloric acid, low total acidity, Boas-Oppler bacillus, sarcinae, bacteria, blood, organic acids); x-ray (irregular filling defect).

Perforated Peptic Ulcer (*Gastric or Duodenal*).—*Characteristics.*—There is sudden severe, continuous epigastric pain, spreading over the whole abdomen as general peritonitis develops, and accompanied by boardlike rigidity and tenderness of the epigastrium.

Chief Signs.—History of previous stomach trouble; sudden onset; shock; pulse often strong, but increasing steadily in rate; temperature at first subnormal, but later rising; latent period of a few hours, followed by symptoms of general peritonitis (see page 463).

Acute Gastritis.—*Characteristics.*—There is a diffuse epigastric discomfort and tenderness rather than actual pain.

Chief Signs.—Acute onset; anorexia; furred tongue; headache; vomiting (first food, then bile); may be fever; duration one to three days.

Chronic Gastritis.—*Characteristics.*—Pain is not characteristic of the disease. There are feelings of distress or oppression after eating which may become aggravated and amount to actual pain. When the stomach is empty there may also be a painful sensation. There is pain on pressure over the stomach, usually diffuse and not severe.

Chief Signs.—Chronicity; flatulence; nausea, especially in the morning; acid eructations; diminished appetite; furred tongue; bad taste in the mouth; muddy complexion; vomiting at intervals; frontal headache; depression, irritability, giddiness; constipation; gastric analysis (often diminished hydrochloric acid, copious mucus in some cases).

Chronic Pancreatitis.—*Characteristics.*—While notoriously indefinite as to symptomatology, some cases may develop rather acutely with epigastric pain, nausea, vomiting, and jaundice. Differing from gall-stone colic, however, the pain is in the middle of the epigastrium and passes to the left rather than to the right, with tenderness in the same region. A series of such attacks may follow. In certain other

cases the pain may develop slowly. In many cases pain is absent or due to gall-stone colic.

Chief Signs.—May be those of gall-stones; dyspepsia; jaundice; vomiting; may be palpable enlargement of the head of the pancreas.

Toxic Gastritis.—*Characteristics.*—There is intense pain in the mouth, throat, and stomach, and the abdomen is tender, distended, and painful on pressure.

Chief Signs.—History of taking poison (phosphorus, phenol, arsenic, bichlorid of mercury, ammonia); salivation; difficulty in swallowing; constant vomiting of bloody fluid; collapse; may be albumin or blood in the urine; may be petechiæ in the skin; corrosion of the mucous membrane of the mouth and pharynx; chemical examination of the vomitus.

Cholelithiasis (Gall-Stones).—*Characteristics.*—Sometimes gall-stones may be the cause of epigastric pain which may even be definitely related to meals or to the taking of a particular article of food. In the earlier and milder attacks of colic, the pain may be referred to the epigastrium.

Chief Signs.—See page 471.

Acute Hemorrhagic Pancreatitis.—*Characteristics.*—One of the most characteristic features is the suddenness of the onset with violent colicky pain in the epigastrium and upper part of the abdomen.

Chief Signs.—Sudden onset; shock and collapse; early, copious, and bile-stained vomiting; abdominal distention and tenseness; sense of resistance to deep pressure; constipation; subnormal temperature; leukocytosis.

Tabes Dorsalis (Locomotor Ataxia).—*Characteristics.*—Gastric crises may occur early and persist as the most prominent feature. The onset is usually sudden, with pain of a severe, burning, twisting type in the epigastrium, radiating to the back and behind the sternum. Vomiting follows the pain, and may be quite independent of food. Pallor, sweating, cold extremities, and a small pulse are associated.

Chief Signs.—History of syphilis (six to fifteen years previous); lightning pains; absence of the knee-jerks; Argyll-Robertson pupils; Romberg's sign; later, ataxic gait; sensory changes; trophic lesions; hypotonia; difficulty in micturition; optic atrophy; ocular palsies; positive Wassermann; spinal fluid examination (positive Wassermann, increased globulin, lymphocytosis, colloidal gold, tabetic curve).

Carcinoma of the Pancreas.—*Characteristics.*—Paroxysms of severe, deep-seated epigastric pain occur from time to time.

Chief Signs.—Occurrence in late middle life; intense progressive jaundice; occasionally nausea and vomiting; rapid emaciation; enlarged gall-bladder; rarely epigastric tumor; glycosuria; may be fatty stools.

Abdominal Angina.—*Characteristics.*—Severe epigastric pain may occur in paroxysms, especially upon exertion. It radiates back to the spine or upward beneath the sternum. There is usually hyperesthesia of the solar plexus. The attack is often attended by flatulence, tenesmus, and other abdominal symptoms, and lasts from a few minutes to a few hours.

Chief Signs.—Collapse and fear of sudden death; faintness; presence of cardiovascular disease (atheroma, hypertension); relief by the use of vascular dilators.

Achylia Gastrica.—*Characteristics.*—In some cases severe epigastric pain may occur while food is in the stomach. If the motility of the stomach is good, symptoms may be slight.

Chief Signs.—May be wasting; may be vomiting; sore tongue; appetite variable; may be diarrhea, relieved by hydrochloric acid; may be pernicious anemia or gastric carcinoma; gastric analysis (complete absence of hydrochloric acid and ferments, very low organic acidity).

Subphrenic Abscess (*Subdiaphragmatic Abscess*).—**Characteristics.**—There may be severe pain and tenderness in the epigastrium and right hypochondrium, especially if the abscess is to the right of the suspensory (falciform) ligament of the liver, or extraperitoneal (on the bare area of the liver).

Chief Signs.—May be initial symptoms of perforative ulcer or appendicitis, followed later by symptoms of suppuration (chills, fever, wasting, leukocytosis); may be vomiting, bilious or bloody; embarrassed respiration; may be movable bubble of air or a palpable mass in the epigastrium; tenderness and rigidity; may be thoracic signs (dulness, diminished breath sounds, or tympany); exploratory puncture; x-ray.

Cardiac Decompensation (*Heart-Failure*).—**Characteristics.**—Severe epigastric pain may occur, which may even simulate the pain of gastric ulcer. In such cases the pain is aggravated by exertion. There may be epigastric tenderness.

Chief Signs.—See page 449.

Aneurysm of the Abdominal Aorta.—**Characteristics.**—There may be pain in the epigastrium, which radiates to the back, where it is most severe. It is intense and persistent.

Chief Signs.—History of syphilis; pulsating expansile tumor on deep palpation; retardation of the femoral pulses; epigastric pulsation; systolic bruit; may be gastric symptoms; x-ray.

Pulsating Abdominal Aorta (*Dynamic Aorta*).—**Characteristics.**—Pain similar to abdominal aneurysm may occur.

Chief Signs.—Occurrence usually in neurotic women; may be enteroptosis; vigorously pulsating aorta; absence of tumor.

Epigastric Herniæ.—**Characteristics.**—There may be recurring attacks of severe epigastric pain.

Chief Signs.—Palpation of small tumors usually along the linea alba.

Pancreatic Cyst.—**Characteristics.**—Deep-seated pain is present in the epigastrium or back.

Chief Signs.—Presence of a smooth, spherical, fluctuating, often movable tumor above the umbilicus (stomach above and colon below); nausea and vomiting; rarely jaundice, glycosuria, and pancreatic stools.

Pancreatic Calculi.—**Characteristics.**—The so-called pancreatic colic is a colicky, deep-seated, epigastric pain, radiating along the lower left costal margin to the back. The colic is accompanied by vomiting, exhaustion, and sometimes actual collapse.

Chief Signs.—Vomiting; fever; pyalism; occasionally transient jaundice, glycosuria, fatty stools; x-ray.

Acute Appendicitis.—**Characteristics.**—The pain in the majority of cases is first referred to the epigastrium or umbilical region and only later is localized in the right iliac fossa.

Chief Signs.—See page 476.

Pylorospasm (*Functional*).—**Characteristics.**—Cramplike pains in the lower

epigastrium in the region of the pylorus occur two or three hours after the ingestion of a meal at the height of digestion, at first appearing at irregular intervals and lasting but a short time, but gradually becoming more frequent and of longer duration.

Chief Signs.—Exclusion of organic disease; may be vomiting; may be palpable tumor in marked grades; x-ray; relief by antispasmodics.

Less Common Causes.—Acute intestinal obstruction; gastrectasis; pleurisy; intercostal neuralgia; strain of the abdominal muscles; rheumatic fever; cholecystitis; spinal caries; gastralgia; peptic ulcers of the esophagus; acidosis (especially in diabetes mellitus); linitis plastica; gastrosuccorrea; gastric adhesions; enteroptosis; hepatoptosis; movable kidney; distended transverse colon; syphilis of the stomach; tuberculous peritonitis (tabes mesenterica); abscess of the liver; gumma of the liver; pneumonia (in children); cancer of the liver; perihepatitis; tuberculosis of the stomach; eclampsia; chlorosis; Asiatic cholera; coronary thrombosis; pulmonary thrombosis; acute yellow atrophy of the liver; yellow fever; enterospasm; Addison's disease.

TENDERNESS IN THE EPIGASTRIUM

Tenderness in the epigastrium often follows severe coughing or vomiting, or excessive use of the abdominal muscles. Firm and steady pressure relieves reflex abdominal tenderness but aggravates tenderness due to inflammation.

Perforated Peptic Ulcer (*Gastric or Duodenal*).—*Characteristics.*—There is first a severe tenderness in the epigastrium or right hypochondriac region, but as general peritonitis develops it becomes universal. The pelvic peritoneum is then also tender as determined by rectal or vaginal examination.

Chief Signs.—See page 467.

Ulcer of the Stomach.—*Characteristics.*—Tenderness on pressure is common, even by the waistband. There may be an area of superficial tenderness, in a small area, one-half to one inch in diameter, sharply defined, between the ensiform cartilage and the left costal margin. Less often there is a similar dorsal area of tenderness, between the seventh and eleventh dorsal spines, slightly to the left.

Chief Signs.—See page 466.

Carcinoma of the Stomach.—*Characteristics.*—There is usually marked tenderness on pressure in the epigastrium. The areas of skin tenderness are referred to the region between the nipple and the umbilicus in front, and from the fifth to the twelfth spine behind.

Chief Signs.—See page 467.

Acute Gastritis.—*Characteristics.*—The abdomen may be slightly tender in the epigastric region and somewhat distended.

Chief Signs.—See page 467.

Chronic Gastritis.—*Characteristics.*—There is pain on pressure over the stomach, usually diffuse and not severe.

Chief Signs.—See page 467.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics.*—A certain amount of epigastric tenderness is present due to the dilated right ventricle and passive congestion of the liver.

Chief Signs.—See page 449.

Food-Poisoning.—*Characteristics.*—There is tenderness over the epigastrium and sometimes over the whole abdomen.

Chief Signs.—See page 464.

Less Common Causes.—Subphrenic abscess; acidosis; acute appendicitis; cholelithiasis; acute hemorrhagic pancreatitis; diaphragmatic pleurisy; acute pericarditis; movable kidney; linitis plastica; hypochondriasis; “hysteria”; Addison’s disease; acute yellow atrophy.

PAIN IN THE RIGHT HYPOCHONDRIMUM

(See also “Lumbar Pain,” page 542; and “Pain in the Side of the Chest,” page 369.)

Acute Cholecystitis.—*Characteristics.*—Severe paroxysmal pain is, as a rule, the first indication, most commonly in the right side of the abdomen in the region of the liver. It may, however, be in the epigastrium or lower down in the region of the appendix.

Chief Signs.—Usually a history of previous biliary colic; nausea and vomiting, rigors, rapid pulse, high temperature, prostration, leukocytosis (if suppurative); tenderness and rigidity in the gall-bladder region; gall-bladder usually palpable; usually no jaundice.

Cholelithiasis (*Gall-Stones*).—*Characteristics.*—Attacks of biliary colic occur from time to time. The attack sets in abruptly with agonizing pain in the right hypochondriac region, which radiates to the shoulder, or is very intense in the epigastric and in the lower thoracic regions. The pain is usually so intense that the patient rolls about in agony. The attack usually lasts from three to twelve hours.

Chief Signs.—May be history of previous attacks; prodromes (epigastric oppression, relieved by eructations or vomiting); attacks of dyspepsia; slight rigors; fever (102-103 degrees); collapse; tenderness over the gall-bladder; may be jaundice (usually transient and slight unless the common duct is obstructed); passage of stones in the feces; symptoms of cholecystitis in the interim; x-ray and gall-bladder visualization (Graham method).

Chronic Cholecystitis.—*Characteristics.*—Attacks of pain frequently occur, but are usually milder unless due to gall-stones. In the intervals, nagging pains in the gall-bladder region may be complained of. These attacks are accompanied by moderate tenderness of the gall-bladder.

Chief Signs.—May be a history of gall-stones or acute cholecystitis; dyspepsia; ill-health; gall-bladder may be palpable; rarely jaundice; x-ray and gall-bladder visualization (Graham technic); Lyon drainage.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics.*—Dragging or aching pain may be present in the region of the liver due to passive congestion of that organ.

Chief Signs.—See page 449.

Diaphragmatic Pleurisy.—*Characteristics.*—The pain is low in the zone of the diaphragm and may simulate that of acute abdominal disease and may be intensified by pressure at the point of insertion of the diaphragm at the tenth rib. There may also be pain referred to the neck and shoulder. The pain is accompanied by hyperesthesia of the skin, but deep pressure in the gall-bladder and appendix region is well borne.

Chief Signs.—Respiration thoracic and short; may be attacks of dyspnea or angina; large effusions rare; intensive subjective with trifling objective features; exclusion of abdominal disease.

Subphrenic Abscess (*Subdiaphragmatic Abscess*).—*Characteristics.*—There may be severe pain and tenderness in the right hypochondrium.

Chief Signs.—See page 469.

Carcinoma of the Liver.—*Characteristics.*—Pain or a sensation of uneasiness in the right hypochondriac region may be present, but enormous enlargement of the liver may occur without the slightest pain.

Chief Signs.—See page 521.

Abscess of the Liver (*Tropical or Pyemic*).—*Characteristics.*—The pain is variable and is usually referred to the back or shoulder; or there is a dull aching sensation in the right hypochondrium. When turned on the left side, the patient often complains of a heavy dragging sensation.

Chief Signs.—History or presence of amebiasis (tropical abscess); or presence of severe constitutional symptoms of sepsis (pyemic abscess); enlarged, tender liver; slight jaundice; fever, rigors, sweats, leukocytosis; aspiration (pus).

Acute Appendicitis.—*Characteristics.*—The pain may extend to or be mainly in the right hypochondrium if the appendix be retrocecal in position.

Chief Signs.—See page 476.

Carcinoma of the Gall-Bladder.—*Characteristics.*—Discomfort is present in the right hypochondrium and there may be attacks of severe paroxysmal pains and superficial tenderness. Pain on pressure is present between these attacks.

Chief Signs.—Occurrence in late middle life; usually progressive jaundice; palpable gall-bladder; cachexia; enlarged liver.

Hypertrophic Biliary Cirrhosis (*Hanot's Disease*).—*Characteristics.*—Attacks of pain in the region of the liver occur, which may be severe and associated with nausea and vomiting. The pain in other cases may be slight and dragging.

Chief Signs.—Occurrence in young adults, usually males; chronicity; progressive weakness and malaise; progressive jaundice, deepening with each attack of pain; liver and spleen greatly enlarged with firm edges; bile in the urine without clay-colored stools; absence of acites.

Gumma of the Liver.—*Characteristics.*—Pain in the right hypochondrium or epigastrium is common.

Chief Signs.—History of syphilis; liver large and tender, causing a smooth prominent bulging in the epigastrium; may be palpable spleen; positive Wassermann and therapeutic test.

Less Common Causes.—Duodenal ulcer; constipation (with flatulence or impaction at the hepatic flexure); perihepatitis; nephrolithiasis (usually in the flank); cirrhosis of the liver (alcoholic); carcinoma of the bile-ducts; carcinoma of the hepatic flexure of the colon; pneumonia; pleurisy; angina pectoris; carcinoma of the stomach; carcinoma of the pancreas; acute hepatitis; chronic appendicitis; pyelitis; movable kidney (Deitl's crisis); tuberculosis of the kidney; tumor of the kidney; herpes zoster; intercostal neuralgia; sprain (bowler's side); tabes dorsalis; enteroptosis; hydatids of the liver (inflamed); acute yellow atrophy; periarteritis nodosa; trench fever; distoma hepatica.

TENDERNESS IN THE RIGHT HYPOCHONDRIUM

Acute Cholelithiasis (*Gall-Stone Colic*).—*Characteristics*.—There is usually marked tenderness at the gall-bladder spot, midway between the tip of the ninth rib and the umbilicus. The liver is also usually very tender.

Chief Signs.—See page 471.

Acute Cholecystitis.—*Characteristics*.—With the paroxysm of pain there may be general tenderness becoming localized. The local tenderness is extreme, but it may be deceptive in its situation. The distended gall-bladder may sometimes be felt.

Chief Signs.—See page 471.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics*.—The liver is usually enlarged and tender, the degree of tenderness being a measure of the congestion of that organ.

Chief Signs.—See page 449.

Cirrhosis of the Liver (*Alcoholic*).—*Characteristics*.—The liver, even at an early stage, is usually enlarged and tender, and is usually palpable with a hard edge and a rough surface.

Chief Signs.—See page 499.

Diaphragmatic Pleurisy.—*Characteristics*.—There may be tenderness in the region of the gall-bladder simulating visceral disease, and possibly even accompanied by rigidity. This tenderness, however, is a hyperesthesia, and deep-seated pressure over the gall-bladder and appendix is well borne.

Chief Signs.—See page 471.

Abscess of the Liver (*Tropical or Pyemic*).—*Characteristics*.—Pain on pressure over the liver is usually present, particularly on deep pressure at the costal margin in the nipple line.

Chief Signs.—See page 472.

Subphrenic Abscess (*Subdiaphragmatic Abscess*).—*Characteristics*.—There is tenderness in the lower part of the right chest when pressure is made through one or through several intercostal spaces. It may also be in the upper right quadrant. The tenderness is more superficial than in other forms of organic disease, but muscular rigidity is usually present.

Chief Signs.—See page 469.

Less Common Causes.—Carcinoma of the liver; acute hepatitis; perihepatitis; syphilis of the liver; sarcoma of the liver; Weil's disease; suppurative pyelephlebitis; cholangitis; malaria; obstructive jaundice; bronchial asthma; influenza; carcinoma of the gall-bladder; acute yellow atrophy; actinomycosis; hydatids of the liver (inflamed); phosphorus poisoning; relapsing fever; cysts of the spleen; abscess of the spleen.

PAIN IN THE LEFT HYPOCHONDRIUM

(See also, "Lumbar Pain," page 542; and "Pain in the Side of the Chest," page 369.)

Anemic or debilitated individuals may complain of a "stitch in the side" in the region of the spleen. Pain in the left hypochondrium is not nearly as common as pain in the right. Probably nine-tenths of all instances of pain in this region,

coincidentally with pains in the lower thoracic region on the left side, are of gastric origin, and are symptomatic of gaseous distention of the fundus of the stomach, *i.e.*, flatulence, meteorism, *aërophagia*. Such distention is usually dependent upon such conditions as gastric neurosis, hyperacidity, chronic intestinal disease, cholelithiasis, chronic appendicitis, *aërophagia*, etc.

Fecal Impaction.—*Characteristics.*—Occasionally there is pain due to obstruction or distention of the splenic flexure by fecal masses. Usually it is a dull pressure pain. The pain may disappear after the administration of a few large enemata, thus establishing the diagnosis.

Chief Signs.—Constipation; colicky pains; x-ray.

Splenic Infarction.—*Characteristics.*—A sudden violent pain is felt in the left hypochondrium and splenic regions. It may be described as a burning, crushing, or stinging pain. The spleen may be tender or insensitive.

Chief Signs.—Presence of cardiac disease or a septic process; sudden onset; palpable spleen; fever; occasionally friction sound.

Splenomegaly.—*Characteristics.*—Occasionally there is dull pain in the left hypochondrium and splenic regions, but often only a sense of tension. If there is an associated perisplenitis the pain may be more severe. In heart failure the spleen may be enlarged and tender (passive congestion).

For causes of Splenomegaly, see page 523.

Mucomembranous Colitis (*Mucous Colitis*).—*Characteristics.*—There is often a very painful spot just between the navel and the left costal border, tender on pressure, and sometimes the paroxysms of pain seem centered in this region.

Chief Signs.—See page 464.

Carcinoma of the Colon (*Splenic Flexure*).—*Characteristics.*—A new growth in the splenic flexure of the colon may cause pain in the left hypochondrium. There may be a permanent dull pain, or paroxysmal colicky pains, persisting for a long time. These attacks are synchronous with periods of constipation or emesis, and are relieved by free evacuation of the bowels. The pains may persist for a time as the only symptom. In many cases, however, pain is absent.

Chief Signs.—Occurrence in late middle life; meteorism; visible peristalsis; rigidity of the intestine; presence of a palpable tumor; alternating constipation and diarrhea; later, cachexia; macroscopic or occult blood in the stools; x-ray study.

Less Common Causes.—Movable spleen; contusion of the spleen; rupture of the spleen; amyloid spleen; abscess of the spleen; tuberculosis of the spleen; acute congestion of the spleen (in infectious diseases); pleurisy; herpes zoster; intercostal neuralgia; angina pectoris; hyperchlorhydria; flatulence; gastric ulcer; chronic appendicitis; cholelithiasis; abdominal aneurysm; movable kidney; subphrenic abscess; pancreatic calculi; pneumonia; gastroptosis; tabes dorsalis (gastric crisis); diaphragmatic hernia; perinephritic abscess; pyelitis; nephrolithiasis; tuberculosis of the kidney; tumor of the kidney.

TENDERNESS IN THE LEFT HYPOCHONDRUM

Simple flatulence or distention of the stomach may give rise to tenderness in this region.

Mucomembranous Colitis (*Mucous Colitis*).—*Characteristics.*—There is often a tender spot between the navel and the left costal border.

Chief Signs.—See page 464.

Chronic Myeloid Leukemia.—*Characteristics.*—The spleen may be tender due to the associated perisplenitis.

Chief Signs.—See page 524.

Splenic Infarction.—*Characteristics.*—An enlarged spleen with tenderness on deep pressure may be found.

Chief Signs.—See page 474.

Less Common Causes.—Fecal impaction; influenza; typhoid fever; malaria; tuberculosis of the spleen; relapsing fever; abscess of the spleen; carcinoma of the spleen; splenic anemia; diaphragmatic pleurisy; subphrenic abscess.

PAIN IN THE UMBILICAL REGION

Acute Intestinal Obstruction (*Intussusception; Volvulus; Bands; Strangulated Hernia*).—*Characteristics.*—The pain is usually referred to the middle of the abdomen, especially in obstruction of the small intestine, but exact localization possesses no real significance. It is important to note that in the early stages the abdomen is not sensitive to pressure. In large bowel obstruction, the pain is usually localized in the early stages. The pain is intense, at first colicky in character, later continuous.

Chief Signs.—See page 464.

Chronic Intestinal Obstruction (*Carcinoma of the Bowel; Strangulation; Stricture; Impacted Feces*).—*Characteristics.*—There is intermittent colicky pain, often referred to the umbilical region. The attacks of pain are similar to those of acute obstruction, but are milder, and extend over a period of months or years. The severity of the symptoms varies and gradually increases. Symptoms of acute obstruction may finally supervene.

Chief Signs.—Chronic intestinal disturbance; visible peristalsis and distention; may be palpable tumor (due to intermittent spasm of the intestine, or to growth or fecal mass); constipation or diarrhea; anemia, wasting, ill-health; examination of the feces (blood, especially in carcinoma); sigmoidoscopy; x-ray study.

Acute Appendicitis.—*Characteristics.*—The pain in the majority of cases is first referred to the epigastrium or umbilical region and only later localized in the right iliac fossa. Occasionally the initial pain is felt "all over the abdomen," though this is more usual in cases with perforation.

Chief Signs.—See page 476.

Acute Diverticulitis.—*Characteristics.*—The disease may be ushered in with acute abdominal pain, being at first referred to the navel region or to the pit of the stomach. The symptoms closely resemble those of acute appendicitis, but the final localization is in the left iliac fossa.

Chief Signs.—See page 477.

Chronic Lead Poisoning (*Plumbism; Saturnism*).—*Characteristics.*—Severe attacks of cramplike abdominal pains referred to the umbilicus may be the chief or only symptom of the disease. From the umbilicus, the pain may radiate over the abdomen, becoming diffuse.

Chief Signs.—See page 465.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—The only complaint of

the patient may be of abdominal pain, often referred to the region of the umbilicus. The typical gastric crisis may, however, be replaced by a much more diffuse pain.

Chief Signs.—See page 468.

Tuberculous Peritonitis.—*Characteristics.*—An abscess may localize in the umbilical region, forming a painful swelling.

Chief Signs.—See page 465.

Diastasis Recti (*Divarication of the Recti Muscles*).—*Characteristics.*—Diffuse pain may be complained of about the umbilicus. In many cases, however, there are no subjective symptoms.

Chief Signs.—See page 509.

Umbilical Hernia.—*Characteristics.*—Attention may be called first to the protrusion by pain.

Chief Signs.—See page 505.

Less Common Causes.—Gastric ulcer; duodenal ulcer; omental cyst; omental carcinoma; mucomembranous colitis; chronic enterocolitis; cholelithiasis; ruptured ectopic pregnancy; aneurysm of the abdominal aorta; embolism of the superior mesenteric artery; neurosis; sebaceous cyst; epithelioma of the umbilicus; eczema intertrigo; cyst of the omphalomesenteric duct; chronic pulmonary tuberculosis; tuberculosis of the spine; carcinoma or sarcoma of the spinal cord; compression myelitis; oöphoritis; tabes mesenterica; enlarged mesenteric glands; mesenteric cyst; gastrojejunal ulcer following gastro-enterostomy; spinal cord tumor.

TENDERNESS IN THE UMBILICAL REGION

Acute Enterocolitis (*Acute Catarrhal Enteritis; Acute Intestinal Indigestion or Catarrh; Acute Diarrhea; Cholera Infantum; Cholera Morbus*).—*Characteristics.*—Periumbilical tenderness is usually present when the small bowel is mainly involved.

Chief Signs.—See page 463.

Duodenal Ulcer.—*Characteristics.*—In a certain number of cases there is a tender spot above and to the right of the umbilicus.

Chief Signs.—See page 466.

Chronic Enterocolitis (*Chronic Intestinal Catarrh; Chronic Ileocolitis; Chronic Catarrhal Enteritis; Chronic Diarrhea; Atrophic and Hypertrophic Enterocolitis*).—*Characteristics.*—There is frequently tenderness along the course of the colon. The transverse colon crosses over in the region of the umbilicus.

Chief Signs.—See page 463.

Ulcerative Colitis.—*Characteristics.*—There is usually colonic tenderness.

Chief Signs.—See page 464.

Less Common Causes.—Carcinoma of the intestine; dysentery.

PAIN IN THE ILIAC AND INGUINAL REGIONS

(*Right or Left*)

Acute Appendicitis.—*Characteristics.*—The pain is at first umbilical, epigastric, or diffuse. Early it is colicky in character, and later becomes constant and

usually localized at McBurney's point, which is situated at the outer point of trisection of a line joining the umbilicus to the right anterior superior iliac spine. Very occasionally, however, it may localize in the left iliac fossa. The pain may radiate to the right thigh and testis. It may disappear entirely with the onset of gangrene or suppuration.

Chief Signs.—Pain (as described above); nausea and vomiting, always following the pain, never preceding; moderate fever; constipation; rigidity of the right rectus; deep tenderness at McBurney's point; superficial tenderness in the right iliac fossa; the right leg semiflexed; may be bladder irritability; polymorphonuclear leukocytosis (12,000-15,000); may be tumor mass (abscess); distention, collapse, diffuse tenderness (general peritonitis).

Chronic Appendicitis.—*Characteristics.*—There is a history of vague abdominal pain, with recurrent attacks of acute appendicitis of varying degree.

Chief Signs.—Irregular abdominal symptoms (anorexia, dyspepsia, constipation, often attacks of colic, diarrhea and distention); tenderness at McBurney's point during exacerbations; x-ray study.

Acute Salpingitis (*Salpingo-Oöphoritis*).—*Characteristics.*—There is severe pain, paroxysmal and lancinating in character, in one or both iliac fossæ or in the hypogastrium, which may radiate to the thigh, and which is less circumscribed than the pain of appendicitis.

Chief Signs.—Vaginal discharge; tenderness in one or both tubal regions or over the epigastrium; tenseness of the abdominal muscles; fever; leukocytosis; tenderness on bimanual palpation and the presence of a mass to one side of or behind the uterus; may be gonococci in the vaginal smear.

Chronic Salpingo-Oöphoritis (*Pyosalpinx; Pus Tube; Chronic Salpingitis; Chronic Pelvic Peritonitis*).—*Characteristics.*—From time to time there are attacks of cramplike pains in the lower abdomen, often more marked in one or other of the iliac fossæ. Between exacerbations there may be a dull heavy pain, increased by walking, jolting, or straining.

Chief Signs.—Leucorrhea; dysmenorrhea; menorrhagia; sterility; backache; dysuria; dyschesia; presence of a painful mass behind or beside the uterus.

Ureteral Calculus.—*Characteristics.*—An impacted stone may give rise to but little pain. Occasionally, however, it produces acute ureteral colic, the pain being referred to the iliac fossa and often radiating to the testicle.

Chief Signs.—Urinary symptoms (frequency, pain, hematuria); absence of fever and of rigidity over the painful area; history of attacks suggestive of renal colic; ureteral catheterization; x-ray.

Acute Diverticulitis.—*Characteristics.*—The patient is seized almost suddenly with acute pain in the left iliac fossa, similar to that of acute appendicitis.

Chief Signs.—Occurrence in middle age or later (especially in stout males with chronic constipation and colitis); tenderness and rigidity in the left lower quadrant, with or without a tumor; fever; leukocytosis; frequent urination; pain in the left iliac fossa on rectal palpation.

Chronic Diverticulitis.—*Characteristics.*—The usual history is that of chronic indigestion associated with a dull, aching pain in the left side, but in some instances merely with discomfort. Exacerbations of pain may occur periodically.

Chief Signs.—Occurrence in middle age; constipation; passage of pus and

mucus; gaseous distention; acute exacerbations of temperature with increase of pain and tenderness; marked general toxemia; may be palpable tumor in the left iliac fossa; may be vesicocolic fistula; x-ray.

Acute Pyelitis (*Coli Bacilluria*).—*Characteristics*.—The pain may be referred to the iliac fossa (especially in right-sided pyelitis) rather than to the back and loin, simulating appendicitis.

Chief Signs.—Initial rigor; fever (103° or more); pain on micturition; tenderness in the loin; absence of abdominal tenderness and rigidity; pyuria and bacilluria.

Ovarian Cyst (*Twisted Pedicle*).—*Characteristics*.—There is severe pain in the iliac fossa or lower abdomen generally.

Chief Signs.—May be history of pelvic tumor; vomiting (simultaneous with the pain); shock and collapse; abdominal rigidity; presence of a diffuse, tender swelling in the lower abdomen; evidence of effusion.

Carcinoma of the Colon (*Sigmoid or Cecum*).—*Characteristics*.—In many cases pain is not a prominent symptom until obstruction occurs. In some, however, there is a permanent, dull, localized pain in the iliac fossa, or persistent paroxysmal, colicky pains.

Chief Signs.—Occurrence in late middle life; increasing constipation, with constantly repeated desire to defecate, and tenesmus (sigmoid); passage of blood and mucus per rectum; may be palpable tumor; loss of weight; sigmoidoscopy (sigmoid carcinoma); x-ray study.

Fecal Impaction.—*Characteristics*.—Usually there is not much pain, but occasionally there is pain due to obstruction and distention. This is relieved by the passage of flatus or by evacuation of the bowels by repeated enemas. The pains are left-sided if the mass is in the sigmoid, right-sided if in the cecum. There may be tenderness due to stercoral ulcers.

Chief Signs.—Occurrence usually in elderly persons; chronic constipation; distention; palpable masses in the cecum or sigmoid, which may pit on pressure; x-ray study.

Inguinal Hernia.—*Characteristics*.—Even a small hernia may cause dull, dragging, wearing pain in the iliac fossa and groin, often only a sense of weight. Others may be discovered accidentally. A hernia may become acutely painful if it becomes inflamed, obstructed (incarcerated), or strangulated. If inflamed, the hernia becomes swollen, hot and tender, and there is fever, and often vomiting and constipation. If obstructed, it becomes tender and painful, harder and larger than normal, dull on percussion, and there is colicky pain, abdominal distention, vomiting, and constipation; there is still an impulse on coughing, however, the vomiting is not fecal, the constipation is not absolute, and there is no fever or local heat. When strangulation occurs the symptoms are those of intestinal obstruction, with twisting, griping pain in the central abdomen and inguinal region, shock, vomiting (becoming fecal), abdominal distention, absolute constipation, and the hernia is irreducible, tense, tender, and has no impulse on coughing; with the onset of gangrene, the pain and tenderness disappear, and the hernia becomes softer.

Chief Signs.—Presence of a soft swelling in the groin, usually reducible and disappearing with a gurgle; tympany on percussion; expansile impulse on coughing; opacity to transmitted light; palpation of the enlarged inguinal ring.

Tuberculosis of the Cecum.—*Characteristics*.—There is a sense of dull pain in

the right iliac fossa with attacks of colicky pain, the whole picture perhaps simulating carcinoma of the cecum or chronic appendicitis.

Chief Signs.—Occurrence in persons with pulmonary tuberculosis; may be fever; may be diarrhea; indefinite fullness or a palpable mass in the cecal region (vertically elongated, hard, very slightly movable, sensitive); may be symptoms of obstruction; abscess formation, or fistula; pus, blood, and tubercle bacilli in the stools.

Ruptured Ectopic Pregnancy.—*Characteristics.*—There is a sudden severe pain in one iliac region accompanied and followed by cramplike, bearing-down pains about the umbilicus and lower abdomen.

Chief Signs.—See page 484.

Cryptorchism (*Undescended, Misplaced, or Retained Testis*).—*Characteristics.*—The testicle is often subject to attacks of inflammation, causing acute pain in the iliac fossa. The organ swells and becomes tender, and there may be a sense of resistance in the lower abdomen. These attacks are most frequent at puberty.

Chief Signs.—Absence of the testicle from the scrotum; presence of a swelling in the inguinal region (unless intra-abdominal); absence of fever.

Acute Epididymitis.—*Characteristics.*—There may be colicky pain of a sickening character in the right or left iliac fossa associated with pain in the testicle. The condition may simulate appendicitis and there may even be tenderness in that region.

Chief Signs.—Cessation of urethral discharge (gonorrheal); swelling and tenderness of the epididymis; swollen and tender vas; swelling and tenderness of the corresponding seminal vesicle and the prostate.

Subcostal Neuritis.—*Characteristics.*—A characteristic “toothache” type of pain occurs, usually on the right side for right-handed persons, provoked by bending to the side, by pressure under the tips of the eleventh or twelfth ribs, and relieved by lying flat.

Chief Signs.—Elimination of visceral disease.

Ileocecal Kink or Appendicular Adhesions.—*Characteristics.*—These conditions give rise to a discomfort in the right iliac region, or a dull grumbling pain, or even an occasional acute pain simulating appendicitis (appendicular colic).

Chief Signs.—Constipation; may be history of appendicitis with recurring attacks unaccompanied by fever; x-ray study.

Tuberculous Adenitis (*Ileocecal*).—*Characteristics.*—In some instances localized abdominal pain and tenderness may occur and appendicitis may be simulated. This condition occurs often as a part of a *tabes mesenterica* or of a tuberculous peritonitis, but in some instances these glands are the ones mainly involved.

Chief Signs.—Occurrence in delicate children; enlarged, tympanitic abdomen; diarrhea (stools thin and offensive); moderate fever; may be palpable multiple, small but firm, tender swellings; von Pirquet test; x-ray.

Acute Iliac Adenitis.—*Characteristics.*—There is pain and tenderness in the iliac fossa.

Chief Signs.—Presence of a septic focus in the area drained by the glands, external or internal; swelling in the iliac fossa.

Sarcoma of the Ilium.—*Characteristics.*—Discomfort or actual pain in the iliac

fossa, right or left, may be the first complaint of patients suffering from sarcoma or other bony tumor of the ilium.

Chief Signs.—Palpation of a firm or even bony-hard mass, completely fixed to the deep parts; tendency to growth and metastasis; x-ray study.

Suppurative Periostitis of the Ilium.—*Characteristics.*—There is severe aching pain, worse at night, and increased by pressure, with thickening on deep palpation of the periosteal structures.

Chief Signs.—History of trauma or infection; constitutional symptoms of sepsis; x-ray.

Lobar Pneumonia (Croupous Pneumonia).—*Characteristics.*—The pain may be altogether abdominal, either central or in the right iliac fossa, suggesting appendicitis. As a rule, in such cases there is neither rigidity nor tenderness in the right iliac fossa upon examination, although the patient may put his hand over this region when indicating where he has the pain. There may be extreme hyperesthesia, but deep pressure is well borne. The pain also is frequently referred to the loin, epigastrium, or to any region to which the intercostal nerves are distributed.

Chief Signs.—See page 412.

Acute Pleurisy.—*Characteristics.*—Pleuritic pain may be felt in the abdomen, including the iliac fossa, or low down in the back, particularly when the diaphragmatic surface of the pleura is involved.

Chief Signs.—See page 369.

Herpes Zoster.—*Characteristics.*—As a rule, with zoster occurring in such a way as to produce pain referred to the iliac fossæ, the pain will not be confined to the fossa, but will be referred also to the inner side of the upper part of the thigh and to some point in the loin. The pain may precede the eruption or last long after its disappearance. It is even probable that in some cases there are pains from zoster without any eruption at all.

Chief Signs.—See page 387.

Ulcerative Colitis.—*Characteristics.*—The abdominal pains are usually general, or at least referred now to one, now to another part of the whole colon, so that the patient seldom complains mainly of pain in an iliac fossa; occasionally, however, pain in one fossa may be more pronounced than over other parts of the colon.

Chief Signs.—See page 464.

Chronic Oöphoritis (Cystic Ovary).—*Characteristics.*—There is usually pain in one or both ovarian regions, which is aggravated by standing or walking, and before and during menstruation. The pain sometimes extends to the thigh.

Chief Signs.—Dysmenorrhea; may be menorrhagia and metrorrhagia; neurotic symptoms; vaginal examination, revealing a large tender ovary.

Typhoid Fever.—*Characteristics.*—Abdominal pain and tenderness are present in about three-fifths of the cases. In some it is only present at the onset, in others it occurs during the course of the disease. Perforation of an ulcer is accompanied by a sudden sharp pain of increasing severity, often paroxysmal in character. Its most frequent situation is at the junction of the right iliac and hypogastric regions; there is usually also tenderness on pressure, commonly localized at this point, sometimes diffuse. Symptoms of acute peritonitis supervene.

Chief Signs.—See page 701.

Psoas Abscess.—*Characteristics.*—The abscess may cause irritation of the ilio-

psoas muscle, producing some pain, tenderness, resistance, and fullness in the iliac fossa. It may also cause flexion or limitation of extension of the right thigh.

Chief Signs.—See page 513.

Inguinal Adenitis (Bubo).—*Characteristics.*—The bubo of gonorrheal or chancreoid origin consists of a painful inflammatory swelling in the groin, of large size and rapid growth. Fluctuation is superadded when suppuration occurs.

For causes of Enlarged Glands of the Groin, see page 537.

Less Common Causes.—Acute oöphoritis; ureteritis; tuberculosis of the spine; tuberculosis of the hip-joint; osteo-arthritis of the spine; aneurysm of the iliac artery; movable kidney; tuberculosis of the kidney; perinephritic abscess; hydronephrosis; nephrolithiasis; intestinal obstruction; amebic typhlitis; actinomycosis of the cecum; sacro-iliac joint disease; obturator hernia; infective arthritis of the lumbar vertebræ; spastic constipation; periproctal abscess; periprostic abscess; volvulus of the sigmoid colon; strangulated retroperitoneal hernia; acute orchitis; varicocele; neurosis; mucous colitis; cecum mobile; rheumatic endocarditis; rupture of an ovarian cyst; ventral hernia; dilated cecum; hernia of the ovary; prolapse of the ovary; saphenous varix; femoral hernia; cyst of the canal of Nuck; arteriovenous aneurysm; lymphosarcoma; iliopsoas bursitis; vesical calculus; inflamed corn; flat-foot; hemorrhoids; umbilical hernia; Meckel's diverticulum; rectal polypus; talipes valgus; curvature of the spine; carcinoma of the rectum; testicular cysts; osteoma of the tibia; old fracture of the tibia; torsion of the spermatic cord.

TENDERNESS IN THE ILIAC AND INGUINAL REGIONS

(*Right or Left*)

Acute Appendicitis.—*Characteristics.*—Local deep tenderness over the site of the appendix is to be elicited almost from the onset of the attack, but at first it is frequently masked by the more generalized referred pains. The most common site of deep tenderness is a spot just below the middle of a line joining the anterior superior iliac spine and the umbilicus. Tenderness over McBurney's point is not so constant. Other situations of tenderness are not so common. Local hyperesthesia of the skin is also frequent, the most usual place for it being a circumscribed area just to the right of and on a level with the umbilicus. It is said that if this area be located lower down, a perforated appendix will almost always be found.

Chief Signs.—See page 476.

Chronic Appendicitis.—*Characteristics.*—Tenderness is usually to be elicited in the same situation as in acute appendicitis. Between exacerbations there may be very little soreness.

Chief Signs.—See page 477.

Acute Salpingitis (Salpingo-Oöphoritis).—*Characteristics.*—The tenderness may be confined to one or both tubal regions or it may extend all over the lower abdomen. On account of this tenderness the abdominal muscles are held more or less tense, thus preventing deep palpation.

Chief Signs.—See page 477.

Chronic Salpingo-Oöphoritis (Pyosalpinx; Pus Tube; Chronic Salpingitis; Chronic Pelvic Peritonitis).—*Characteristics.*—There is tenderness in the lower abdomen usually over one or both tubes.

Chief Signs.—See page 477.

Acute Diverticulitis.—*Characteristics.*—There are acute tenderness and pain, with rigidity of the muscles over the lower left quadrant of the abdomen, generally palpable fullness in the same region, and often an actual tumor difficult to define.

Chief Signs.—See page 477.

Less Common Causes.—Chronic diverticulitis; abscess of the abdominal wall; spastic constipation; cecum mobile; ureteral calculus; carcinoma of the colon (cecum or sigmoid); typhoid fever; fecal impaction; neurosis; pelvic cellulitis; psoas abscess; sacro-iliac joint disease; ruptured ectopic pregnancy; tuberculosis of the cecum; visceroptosis.

PAIN IN THE HYPOGASTRIUM AND PELVIS

Dysmenorrhea.—*Characteristics.*—There is hypogastric pain associated with menstruation. If the cause is a mechanical one there are paroxysmal explosive cramps, radiating through the lower abdomen, inguinal regions, to the back, and down the thighs, and beginning a few hours before the flow but subsiding with the escape of clots. There are no intermenstrual pains in this type. If due to congestion, there is soreness or burning and throbbing pain in the pelvis or lower abdomen, radiating up and down. If the congestion is uterine in origin the pain begins with the flow; if ovarian in origin it begins several days before the flow. There are intermenstrual pains as well, and the flow is diminished. The breasts are often painful and tender.

For causes of Dysmenorrhea, see page 575.

Acute Cystitis.—*Characteristics.*—There is a constant pain deep in the pelvis radiating upward, with agonizing pain and strangury on attempting to urinate. The act of micturition terminates in a series of exquisitely painful spasms.

Chief Signs.—Frequent, urgent urination both by day and by night; tenderness over the bladder; moderate fever; pyuria; may be hematuria (usually slight and terminal).

Acute Salpingitis (Salpingo-Oöphoritis).—*Characteristics.*—The patient is seized with an attack of acute abdominal pain, with great tenderness across the lower part of the abdomen. The pain is usually general across the lower abdomen, but it may be localized on one side. It is often intermittent and colicky in character.

Chief Signs.—See page 477.

Chronic Salpingo-Oöphoritis (Pyosalpinx; Pus Tube; Chronic Salpingitis; Chronic Pelvic Peritonitis).—*Characteristics.*—Sometimes the pain is little more than a continuous pelvic discomfort which the patient has difficulty in describing and is made worse by walking or working. The most constant pain is in the lower abdomen, on one or both sides.

Chief Signs.—See page 477.

Labor (Parturition).—*Characteristics.*—The pains usually begin in the sacral region and then slowly pass to the abdomen and to the thighs. Later they become more general. After delivery, usually in multiparæ, there often are so-called after-pains, painful cramps referred to the pelvis.

Chief Signs.—See page 463.

Abortion and Miscarriage.—*Characteristics.*—There are periodic, cramplike,

bearing-down pains in the hypogastrium associated with a discharge of blood and mucus per vaginam.

Chief Signs.—History of previous amenorrhea, morning sickness, soreness and swelling of the breasts; soft cervix; enlarged uterus.

Acute Appendicitis (*The Pelvic Appendix*).—*Characteristics.*—The early symptoms of appendicitis when the appendix is situated in the pelvis are similar to those of the ordinary type, except that the pain is felt in both right and left iliac fossæ and in the hypogastrium.

Chief Signs.—Those of the ordinary variety (page 476), with rigidity and tenderness at the brim of the true pelvis and in the lower abdomen; vaginal and rectal palpation, revealing tenderness or a painful bulging mass (abscess); frequent and painful micturition; diarrhea or tenesmus.

Retention of Urine (*Distention of the Bladder*).—*Characteristics.*—Retention of urine occurring suddenly produces very severe hypogastric pain and strangury, but in cases of old-standing obstruction the bladder may be distended enormously before pain becomes severe.

Chief Signs.—Presence of a symmetrical, pyriform, fluctuating tumor between the symphysis pubis and the umbilicus, which is dull on percussion, pressure upon which increases the desire to urinate, and which was not previously present and disappears after catheterization.

For causes of Retention of Urine, see page 830.

Septic or Acute Endometritis (*and Metritis*).—*Characteristics.*—The patient complains of cramps in the lower abdomen and of soreness in the pelvis when walking. Sometimes the pain is quite severe.

Chief Signs.—History of labor, abortion, gonorrhea, or instrumentation; chills and fever; passage of blood-clots if the uterus is not completely emptied; large tender uterus with patulous cervix; speculum examination, revealing a free purulent discharge coming from the uterus.

Chronic Endometritis.—*Characteristics.*—There are frequently dragging pains and a sensation of weight in the pelvis associated with backache.

Chief Signs.—History of laceration, displacement, tumor, or infection; leukorrheal discharge from the first, always more profuse before and after menstruation; may be metrorrhagia and menorrhagia; local examination (enlarged uterus cavity, hemorrhagic os internum, discharge); examination of scrapings.

Retrodisplacement of the Uterus (*Retroversion; Retroflexion*).—*Characteristics.*—The principal symptoms are backache, a sense of weight in the pelvis, and menorrhagia. In some cases symptoms may be absent.

Chief Signs.—See page 574.

Laceration of the Cervix.—*Characteristics.*—Dragging pains in the pelvis and backache are usually present in severe cases, but they, like the menstrual disturbances, are to be attributed to the complications, such as relaxed perineum, subinvolution, endometritis, and salpingitis.

Chief Signs.—History of difficult labor, with excessive bleeding; leukorrhea; menorrhagia; vaginal examination, revealing the tear.

Carcinoma of the Uterus.—*Characteristics.*—Pain is absent until the perimetrial tissues are involved, which is often late. Then uterine colic may develop in corporeal cancer, radiating pain in cervical, the pain later becoming constant.

In the late stages neuralgic pains develop and become violent, extending to the back, shooting down the legs, and worse at night.

Chief Signs.—Cancer age; foul, bloody discharge; climacteric or postclimacteric hemorrhage; cachexia; enlargement of the glands of the groin and left supraclavicular region; vaginal examination, revealing a nodular or cauliflower growth of the cervix, or enlargement of the uterus; curettage and biopsy.

Prolapse of the Uterus.—*Characteristics.*—There are sudden, severe, bearing-down pains in the hypogastrium in acute cases (as after a fall). In chronic cases there is a constant dragging sensation in the pelvis and back associated with a sinking feeling in the perineum.

Chief Signs.—Lumbosacral backache; rectocele or cystocele; dysuria; constipation; difficulty in walking; leukorrhea; menorrhagia (unless the menopause has occurred); neurotic symptoms; vaginal examination, revealing cystocele, rectocele, relaxed perineum, and descensus of the cervix (more marked after straining).

Chronic Pelvic Cellulitis (Parametritis).—*Characteristics.*—There is a dull pain in the lower abdomen and back increased by standing and walking and relieved on lying down.

Chief Signs.—See page 486.

Uterine Fibroids (Fibromyomata of the Uterus).—*Characteristics.*—Dragging or pressure pains in the pelvis are often present, with vesical or rectal neuralgia. Rapid growth or cystic degeneration causes increased pain. There may, however, be no pain, even in large growths.

Chief Signs.—Leukorrhea; menorrhagia; may be metrorrhagia; dysmenorrhea; vesical and rectal symptoms from pressure; sterility or abortion; anemia; digestive disturbances; bimanual examination (enlarged uterus with an inseparable smooth, hard tumor).

Subinvolution of the Uterus.—*Characteristics.*—The symptoms are simply a sense of weight and pressure and weakness in the pelvis, associated with menstrual disturbances (usually increased flow). As a rule the most prominent symptoms are those due to complications, such as hyperplastic endometrium, infected endometritis, or retrodisplacement.

Chief Signs.—History of recent confinement; lumbosacral pain; impairment of general health; may be menorrhagia and metrorrhagia; physical examination (relaxed pelvic floor, cervical laceration, symmetrically enlarged uterus more or less insensitive).

Cervical Polyp.—*Characteristics.*—Attacks of cramplike pain may occur in the hypogastrium, due to expulsive efforts of the uterus.

Chief Signs.—Leukorrhea; dysmenorrhea; menorrhagia and metrorrhagia; sterility; examination, revealing the polypus protruding from the cervix or felt with the sound or finger.

Ruptured Ectopic Pregnancy.—*Characteristics.*—In many cases the first manifestation of the abnormal pregnancy is the sudden occurrence of intense, lancinating pain in one or other ovarian region, followed by severe pain in the lower abdomen, and accompanied by faintness and collapse.

Chief Signs.—History of previous amenorrhea for a few weeks, and sterility; irregular uterine bleeding; signs and symptoms of pregnancy; bimanual examination, revealing an indefinite fullness or mass in the culdesac (hematocele).

Varicocele of the Broad Ligament.—*Characteristics.*—There is a dull, aching, pelvic pain, worse on standing, and relieved by the recumbent posture. The symptoms, however, are not distinctive, and are usually overshadowed by those of the more evident lesions (subinvolution, relaxation, tumors, loaded bowel, heart disease, uterine displacement) which give rise to the condition.

Inversion of the Uterus.—*Characteristics.*—This calamity is announced by sudden violent pain in the pelvis.

Chief Signs.—Occurrence following labor (violence); shock and hemorrhage in acute cases; backache; tenesmus; vaginal examination, revealing the inverted body of the uterus.

Retained Placenta.—*Characteristics.*—“Bearing-down” pains in the pelvis occur spasmodically as the uterus endeavors to empty itself.

Chief Signs.—History of labor, miscarriage, or abortion without expulsion of the placenta; uterine bleeding; palpation of the enlarged uterus; manual or instrumental removal of the placenta.

Enteroptosis.—*Characteristics.*—Dragging pains may occur at times from the epigastrium downward to the pelvis. They may be of the “bearing-down” type.

Chief Signs.—Neurotic symptoms; relaxed abdominal wall; constipation; dyspepsia; x-ray.

Chronic Enterocolitis.—*Characteristics.*—There may be attacks of distress, pain, and pressure sensations in the lower bowel, but the pain is more widespread and variable than in pelvic disease; and the tenderness on palpation is more general and ill-defined, all of the lower abdomen being more or less tender, and the tenderness extending above the umbilicus and into the flanks.

Chief Signs.—See page 463.

Mucomembranous Colitis (*Mucous Colitis*).—*Characteristics.*—Severe attacks of pain in the lower abdomen and pelvis may occur simulating pelvic disease.

Chief Signs.—See page 464.

Rupture of the Urinary Bladder.—*Characteristics.*—At the time of the injury there is immediate severe pain in the abdomen, and sometimes a distinct sense of something tearing or giving way. This is usually described as being in the lower part of the abdomen or pelvis. The severe pain felt at the outset is usually continuous.

Chief Signs.—History of contusion of the hypogastrium or fracture of the pelvis; shock; inability to walk; desire to urinate with inability to do so or with passage of bloody urine; symptoms of peritonitis if intraperitoneal; symptoms of extravasation of urine if extraperitoneal (fluctuating tumor in the space of Retzius).

Carcinoma of the Prostate.—*Characteristics.*—Pelvic pain and sciatica, due to sacral plexus involvement by metastasis, are often the earliest symptoms, preceding urinary symptoms by several years.

Chief Signs.—See page 557.

Less Common Causes.—Submucous fibroids of the uterus (during extrusion); uterine retention cyst; sarcoma of the uterus; tumor of the ovary, broad ligament, or Fallopian tube; acute oöphoritis (mumps); laceration of the perineum; vaginitis; ovarian cyst (torsion of the pedicle); pelvic tuberculosis; amenorrhea; vesical calculus; chronic cystitis; tuberculosis of the bladder; simple ulcer of the bladder; foreign body in the bladder; carcinoma of the bladder; papilloma of the bladder;

pericystitis; ureteritis; nephrolithiasis; renal tuberculosis; movable kidney; pyelitis; pyonephrosis; hypertrophy of the prostate (prostatism); sarcoma of the prostate; retroverted gravid uterus; fecal impaction; chronic constipation; acute enterocolitis; dysentery; typhoid fever (perforated ulcer); volvulus; tuberculosis of the intestines; tuberculous peritonitis; pelvic phleboliths; hemorrhoids; proctitis; fissure in ano; tumor of the rectum; pancreatitis; transverse myelitis; neurosis; tumor of the spinal cord; cyst of the urachus; osteomalacia.

TENDERNESS IN THE HYPOGASTRIUM

(See also, "Abnormalities Noted by Digital and Bimanual Palpation," page 582.)

Normally after labor, abortion, or miscarriage, the uterus is tender to lower abdominal pressure.

Acute Cystitis.—*Characteristics.*—There is tenderness on pressure just above the symphysis pubis. This tenderness may also be elicited by rectal and vaginal palpation, and increases the desire to urinate.

Chief Signs.—See page 482.

Acute Pelvic Peritonitis.—*Characteristics.*—The region of the hypogastrium is extremely tender on pressure, and there is rigidity of the recti muscles.

Chief Signs.—Usually a history of recent labor or abortion, instrumentation, or gonorrhea; fever; hypogastric pain; rapid wiry pulse; vaginal discharge; constipation; vomiting; tympany; irritability of the bladder; tenderness on rectal or vaginal examination; dorsal decubitus with the knees drawn up; bimanual examination, revealing hard or soft exudate in the culdesac.

Chronic Pelvic Cellulitis (Parametritis).—*Characteristics.*—There is pelvic tenderness elicited either by deep hypogastric pressure or on vaginal examination.

Chief Signs.—Backache; pain in the lower abdomen; menstrual disturbances; absence of severe exacerbations as in salpingitis; vaginal examination, disclosing induration of extreme hardness felt low in the pelvis and closely attached to the side of the cervix.

Septic or Acute Endometritis.—*Characteristics.*—There is moderate pain and tenderness of recent origin in the lower abdomen, particularly in the hypogastrium.

Chief Signs.—History of recent abortion, miscarriage, inflammation, or objective evidence of inflammation of the urethra, vulvovaginal glands, or cervix; vaginal discharge; slight fever; bimanual examination, revealing tenderness of the body of the uterus; speculum examination, revealing mucopurulent discharge from the uterus.

Retention of Urine (Distention of the Bladder).—*Characteristics.*—Pressure and percussion over the hypogastrium produce tenderness, pain, and a desire to urinate.

Chief Signs.—See page 483.

Acute Salpingitis (Salpingo-Oöphoritis).—*Characteristics.*—There is great tenderness across the lower abdomen including the hypogastrium.

Chief Signs.—See page 477.

Less Common Causes.—Pericystitis; simple ulcer of the bladder; vesical calculus; dysmenorrhea; chronic metritis.

DYSPEPSIA*(Indigestion)*

Dyspepsia may be defined as the consciousness of the activities of the stomach, whether it be epigastric discomfort, flatulence, acid eructations, water-brash, vomiting, or alteration of the appetite. Dyspepsia, then, is not a morbid entity but a group of symptoms, and is due more often to non-gastric than gastric affections; that is, it is more often functional than organic. A thorough examination should always be made in a case of chronic dyspepsia to first exclude organic disease of the stomach. If, following a thorough search for gastric disease and a general examination for extragastric disorder, no cause is found, it may be considered a gastric neurosis. Bad eating, rapid eating, irregular meals, aërophagia, overwork, overuse of tobacco, excessive venery, and worry are common and important causes. Bradycardia may occur in chronic dyspepsia, and extrasystoles may be induced.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics*.—Nausea and distress are common after eating. Vomiting may be troublesome in the early period and more marked in the later stages. There may be superacidity early, hypoacidity later. The stomach is often dilated and atonic. Dyspepsia may be the first symptom noted.

Chief Signs.—See page 412.

Neurosis (*"Hysteria"; "Neurasthenia"; "Psychasthenia"; "Nervous Break-down or Prostration," etc.*).—*Characteristics*.—Dyspepsia is common and associated with heartburn, acid eructations, and sometimes flatulence and water-brash. There may be incessant gagging or regurgitation of food. The food may be expelled before it reaches the stomach. The distress comes very soon after the ingestion of food. Soda often gives some relief, but food rarely. The characteristic thing about the qualitative food distress is its complete lack of uniformity.

Chief Signs.—See page 450.

Chronic Interstitial Nephritis.—*Characteristics*.—Dyspepsia and loss of appetite are common. Severe and uncontrollable vomiting may be the first symptom of uremia or may occur without manifestations of uremia.

Chief Signs.—See page 754.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics*.—Indigestion, loss of appetite, flatulence, vomiting, and constipation are common.

Chief Signs.—See page 449.

Arteriosclerosis.—*Characteristics*.—Dyspeptic symptoms are common.

Chief Signs.—See page 450.

Angina Pectoris.—*Characteristics*.—There may be pain in the epigastrium preceded by flatulence and eructations, and the attack may occur after meals. It may be treated as a form of dyspepsia and the diagnosis missed.

Chief Signs.—See page 367.

Pregnancy.—*Characteristics*.—Morning nausea is common from the sixth to the twelfth week. It may persist and be accompanied by vomiting. Uncontrollable vomiting may occur (pernicious vomiting of pregnancy).

Chief Signs.—See page 502.

Hyperchlorhydria (*Hyperacidity*).—*Characteristics*.—Recurrent attacks of dyspepsia at intervals occur with epigastric discomfort or pain at the height of digestion, acid eructations, and perhaps vomiting. Flatulence is variable.

Chief Signs.—See page 466.

Hypochlorhydria (*Hypo-acidity*).—*Characteristics*.—Flatulence and epigastric discomfort, poor appetite, acid eructations and heartburn are common. Water-brash and pyrosis are occasional symptoms. This is the typical flatulent dyspepsia.

Chief Signs.—Occurrence in middle age; deficient teeth; gastric analysis (diminished hydrochloric acid, presence of organic acids).

Chronic Appendicitis.—*Characteristics*.—The dyspeptic symptoms are irregular and food rarely gives relief. Pain may occur caused by food, and more abdominal than epigastric. Vomiting is rare but there is usually much flatulence.

Chief Signs.—Attacks of pain localized at McBurney's point; tenderness on deep pressure over the appendix; furred tongue; constipation; x-ray.

Cholelithiasis (*Gall-Stones*).—*Characteristics*.—Attacks of indigestion are common. Early symptoms of gall-stones are a sense of fullness, weight, and oppression in the epigastrium, a catch of the breath, a feeling of faintness or nausea, and a chilliness after eating. There is often intolerance to acids, fatty foods, and coarse vegetables. Heartburn, eructations, and belching are frequent. Transient attacks of pain and tenderness over the gall-bladder occur. There is a tendency to constancy of the dyspepsia rather than intermittency. The symptoms occur immediately after eating and tend to improve as the upper digestive tract is emptied. Soda gives definite but temporary relief.

Chief Signs.—See page 471.

Chronic Cholecystitis (*With or Without Gall-Stones*).—*Characteristics*.—Similar to those noted under cholelithiasis (see above).

Chief Signs.—See page 471.

Constipation.—*Characteristics*.—Dyspepsia is common.

Chief Signs.—See page 513.

Acute Appendicitis.—*Characteristics*.—Abdominal pain followed by nausea and vomiting is usually present.

Chief Signs.—See page 490.

Duodenal Ulcer.—*Characteristics*.—Dyspepsia is variable. Flatulence and heartburn are frequent. There is hyperacidity, but vomiting is uncommon. The characteristic thing is the pain which comes from one-half to four hours after meals and often after midnight, usually relieved completely by food or soda.

Chief Signs.—See page 466.

Gastric Ulcer.—*Characteristics*.—Dyspepsia may be trifling or severe. Nausea and vomiting occur frequently, the latter two or more hours after eating. Epigastric pain is rarely absent, recurring regularly one-quarter to two hours after meals and irregularly relieved by food and soda, but completely by vomiting. Hydrochloric acid is often increased.

Chief Signs.—See page 466.

Carcinoma of the Stomach.—*Characteristics*.—Dyspepsia is constant, but vomiting may be late according to the site of the growth. Later nausea becomes continuous. A constant dragging epigastric pain is often present.

Chief Signs.—See page 494.

Acute Gastritis.—*Characteristics.*—There is an uncomfortable feeling in the abdomen with nausea, eructations, and vomiting.

Chief Signs.—See page 491.

Chronic Gastritis.—*Characteristics.*—A feeling of distress or oppression after eating which may amount to acute pain occurs early. Heartburn is common. Flatulent dyspepsia and regurgitation of bitter fluids may occur or even vomiting of slimy mucus after meals, with organic acids. Nausea, particularly in the morning hours, is common. There is pain on pressure over the stomach. Digestion may be long delayed.

Chief Signs.—See page 495.

Chronic Alcoholism.—*Characteristics.*—Catarrh of the stomach is the most common complaint. There is a furred tongue, heavy breath, and a sensation of sinking at the stomach in the morning.

Chief Signs.—See page 515.

Dilatation of the Stomach.—*Characteristics.*—Dyspepsia is present in nearly all cases, with feelings of distress and uneasiness in the region of the stomach. Enormous quantities of food and liquid are vomited at intervals. Hydrochloric acid is normal, diminished, absent, or in excess.

Chief Signs.—See page 495.

Gastropotosis.—*Characteristics.*—Chronic indigestion and gastric stasis are the main symptoms. The condition is usually accompanied by dilatation of the stomach.

Chief Signs.—See page 504.

Chronic Enterocolitis.—*Characteristics.*—Gastric dyspepsia is commonly present. Colicky abdominal pains, distention and flatus, with or without attacks of diarrhea, are important symptoms.

Chief Signs.—See page 463.

Chronic Intestinal Obstruction (*Carcinoma of the Bowel; Strangulation; Stricture; Impacted Feces*).—*Characteristics.*—In every case there is, as a rule, a history of digestive disturbances. The patient is conscious of gaseous distention or a vague feeling of general abdominal discomfort.

Chief Signs.—See page 475.

Carcinoma of the Liver.—*Characteristics.*—Gastric disturbance, loss of appetite, nausea and vomiting are frequent.

Chief Signs.—See page 521.

Nephrolithiasis (*Renal Colic*).—*Characteristics.*—Attacks of dyspepsia are not uncommon.

Chief Signs.—See page 542.

Cirrhosis of the Liver (*Alcoholic*).—*Characteristics.*—Chronic gastric catarrh is a symptom. Nausea and vomiting occur, particularly in the morning. The tongue is furred and the bowels are irregular.

Chief Signs.—See page 499.

Osteo-arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics.*—Dyspepsia occurs in the active stage and may recur at intervals.

Chief Signs.—See page 737.

Gouty Diathesis.—*Characteristics.*—Chronic dyspepsia is the rule. Attacks of "biliousness" are common.

Chief Signs.—Recurring attacks of arthritis limited to the big toe or to the tarsus; presence of tophi in the ears; elimination of excess of uric acid in the urine during the attack.

Chlorosis.—*Characteristics.*—Distress after eating and even cardiac attacks may be present. Hyperacidity is common. The appetite is capricious. The stomach may be dilated or there may be visceroptosis.

Chief Signs.—See page 395.

Pernicious Anemia.—*Characteristics.*—Paroxysms of pain in the stomach with or without diarrhea may occur in crises. The hydrochloric acid is diminished or absent or there is complete achylia. A sore mouth and tongue are common. There is usually anorexia.

Chief Signs.—See page 395.

Lead Poisoning (*Plumbism; Saturnism*).—*Characteristics.*—Dyspepsia, colic, and diarrhea are common.

Chief Signs.—See page 465.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—Gastric crises may be misleading. Attacks of severe epigastric pain, repeated vomiting independent of food, and hyperesthesia in the epigastrium with a girdle of anesthesia may recur every few weeks. Any type of reflex gastric disturbance may occur.

Chief Signs.—See page 468.

Less Common Causes.—Excessive venery; chronic pancreatitis; abscess of the liver; pancreatic cyst; pancreatic calculi; tumors of the pancreas; ephemeral fever; gastralgia; gastrosuccorhea; esophageal pouch; chronic peritonitis; trichiniasis; achylia gastrica; syphilis of the stomach; cancer of the small intestine; cancer of the colon; neurosyphilis.

ACUTE VOMITING

(*Acute Emesis, Including Nausea*)

Acute vomiting is defined as being that which occurs suddenly and without a previous history of recurrent attacks. It is a notable feature at the onset of acute infectious diseases, especially in children, and is of little diagnostic importance in such cases. It is a prominent symptom of seasickness, associated with vertigo induced by disturbance of equilibrium. Following operations in which a general anesthetic has been used, vomiting is very apt to occur, especially if food has been taken previously. The shock of the operation itself may induce emesis. Certain drugs are used for their property of producing vomiting; the main emetics are apomorphin, ipecac, antimony, copper sulphate, and zinc sulphate. The use of morphin is frequently followed by vomiting. After severe psychic shock or fright, vomiting may occur as a reactionary symptom. The use of tobacco by those who are not accustomed to it may inaugurate a most severe attack of nausea and vomiting.

Acute Appendicitis.—*Characteristics.*—Vomiting usually occurs in the early stages of the attack, but ordinarily a few hours, three to four, after the initial pain. Many patients do not vomit but have a sensation of nausea. Loss of appetite or repulsion for food may be regarded as a lesser degree of the same sensation, and is often of equal value in the diagnosis. Any one in previously good health

who suddenly develops anorexia and complains of abdominal pain should be carefully watched for appendicitis. Frequent vomiting at the onset of an attack of appendicitis usually means that the appendix is distended on the distal side of a stricture or concretion, and signals the immediate danger of perforation. Frequent vomiting later in the course of the disease usually means extension of peritonitis.

Chief Signs.—Pain, beginning centrally and localizing in the right lower quadrant; nausea and vomiting, always following the pain, never preceding; moderate fever; constipation; rigidity of the right rectus; deep tenderness at McBurney's point; superficial tenderness in the right iliac fossa; right leg semi-flexed; may be bladder irritability; polymorphonuclear leukocytosis (12,000–15,000); may be tumor mass (abscess); distention, collapse, diffuse tenderness (general peritonitis).

Acute General Peritonitis.—*Characteristics.*—Vomiting is an early symptom with at first small amounts. It is painful, but the vomitus comes up with but little effort or retching. At first the material consists of the stomach contents, later it is bilious, and finally is a thin, slightly fecal fluid.

Chief Signs.—Diffuse pain in the abdomen; usually a history or evidence of some primary infectious lesion (perforated ulcer, appendix, gall-bladder, gangrenous gut, pelvic infection); sudden onset with vomiting and shock; fever; rapid pulse, at first "wiry," later "thready"; constipation, rarely diarrhea; facies hippocratica; dorsal decubitus with the knees drawn up; shallow costal respiration; collapse; oliguria; marked leukocytosis.

Acute Gastritis.—*Characteristics.*—In some cases there is nausea only, but in more severe types there is painful vomiting of ill-smelling and fermented masses of acid reaction and mixed with bile.

Chief Signs.—Acute onset; anorexia; furred tongue; headache; vomiting (first food, then bile); may be epigastric discomfort; may be fever; duration one to three days.

Acute Intestinal Obstruction (*Intussusception; Stricture; Carcinoma; Volvulus; Bands; Strangulated Hernia; Ileus*).—*Characteristics.*—Vomiting sets in after an interval, the length of which may depend upon the situation of the obstruction. The vomiting is severe and persistent. The contents of the stomach are ejected first, and later mucus, bile, and feces, the last being recognized by its odor and color. The vomiting is earlier and more severe the higher the obstruction. In strangulation, however, the vomiting is always early.

Chief Signs.—Intense colicky pain in the abdomen; collapse with low temperature; rapid feeble pulse, cold sweat, dry tongue, and thirst; absolute constipation after the initial emptying; abdomen at first unchanged, later distended and doughy or rigid; variable tenderness, often slight; may be visible peristalsis; may be sausage-shaped tumor in intussusception.

Acute Enterocolitis (*Acute Intestinal Catarrh; Acute Gastro-Enteritis*).—*Characteristics.*—With coincident gastric involvement (acute gastro-enteritis), especially common in children, the symptoms of gastric irritation may lead, perhaps overshadow, those of intestinal catarrh. In a child, the vomiting may begin simultaneously or shortly before the diarrhea. Even without the presence of gastritis, there may be nausea, epigastric discomfort, and occasionally vomiting. The vomited matter consists usually of milk (in infants) or undigested food, sometimes large

quantities of clear fluid, and at other times bile-stained mucus. The vomiting may disappear after a few hours, or persist.

Chief Signs.—Acute onset; pain ranging from discomfort to severe colic; may be tenderness over the colon if involved; anorexia, furred tongue, thirst; may be fever; may be collapse; abdominal distention and tympanites of varying degree; borborygmi; diarrhea (more marked in colon involvement); offensive soft or liquid stools (mucus and blood in colitis, lighter colored in enteritis).

Cholelithiasis (*Gall-Stones*).—*Characteristics.*—Vomiting frequently accompanies a severe attack of biliary colic.

Chief Signs.—See page 471.

Nephrolithiasis (*Renal Colic*).—*Characteristics.*—Vomiting occurs during a severe attack, accompanied by collapse.

Chief Signs.—See page 542.

Acute Cholecystitis.—*Characteristics.*—Vomiting is a variable feature. It is slight in severity when there are no gall-stones and no peritonitis, but when either or both of them are present there may be constant retching and bringing up of bilious material.

Chief Signs.—See page 471.

Uremia.—*Characteristics.*—Gastro-intestinal manifestations of uremia often set in with abruptness. Uncontrollable vomiting may come on and its cause be quite unrecognizable. The attacks may be preceded by nausea and may be associated with diarrhea. Headache, nausea, and vomiting are among the early cardinal symptoms.

Chief Signs.—See page 393.

Acute Alcoholism.—*Characteristics.*—Vomiting may occur early, associated with nausea and vertigo.

Chief Signs.—See page 37.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics.*—Nausea and vomiting are often prominent features of cases which do badly and do not respond to digitalis.

Chief Signs.—See page 449.

Digitalis Intolerance.—*Characteristics.*—Nausea, vomiting, and diarrhea may occur some days after the administration of large doses. Some persons vomit almost immediately from stomach irritation, but this is obviated by hypodermic administration. Usually vomiting occurs only after massive doses have been given.

Chief Signs.—Various types of cardiac arrhythmia (sinus arrhythmia, premature contractions and pulsus bigeminus, partial or complete heart-block, true nodal rhythm); "hunger pain"; diarrhea; oliguria; amelioration of the symptoms on withdrawal of the drug.

Acute Parenchymatous Nephritis (*Acute Bright's Disease*).—*Characteristics.*—Nausea and vomiting often occur at the onset.

Chief Signs.—See page 642.

Migraine.—*Characteristics.*—In some cases the entire attack may consist of a disturbed painful sense of discomfort, with feeling of sick stomach and an attack of "biliousness" which clears up after vomiting. Isolated attacks of vomiting as the sole expression of a migraine are known.

Chief Signs.—See page 6.

Apoplexy (Cerebral Hemorrhage).—*Characteristics.*—Nausea and vomiting are the most frequent precursors of the apoplectic attack.

Chief Signs.—See page 315.

Fracture of the Skull.—*Characteristics.*—If there is cerebral compression due to intracranial hemorrhage or a depressed plate of bone, vomiting may occur in the stage of irritation, associated perhaps with such symptoms as headache, vertigo, restlessness, delirium, convulsions, tinnitus, contracted pupils, choked disk, slow pulse, rapid respirations, and elevated blood-pressure.

Chief Signs.—See page 676.

Toxic Gastritis.—*Characteristics.*—There is constant vomiting, the vomited material being bloody and sometimes containing portions of the mucous membranes.

Chief Signs.—History of taking poison (phosphorus, phenol, arsenic, bichlorid of mercury, ammonia); salivation; difficulty in swallowing; intense pain in the mouth, throat, and stomach; distended, tender abdomen; collapse; may be albumin or blood in the urine; may be petechiæ in the skin; corrosion of the mucous membrane of the mouth and pharynx; chemical examination of the vomitus.

Food-Poisoning.—*Characteristics.*—Vomiting occurs usually from four to five, to twelve hours after eating, accompanied by nausea.

Chief Signs.—Occurrence in several persons who have consumed the same food; sudden onset (three to thirty hours after eating); general abdominal pain of a colicky nature; diarrhea without mucus; headache; cold sweats; variable temperature; bacteriological examination of the stools (*Bacillus enteritidis* of Gaertner, *B. suipestifer*, or *B. aertrycke*); serum tests with recognized strains.

Cerebral Concussion.—*Characteristics.*—The stage of reaction may be inaugurated by a convulsion, or more commonly by slight movements of the extremities and vomiting.

Chief Signs.—See page 10.

Acute Hemorrhagic Pancreatitis.—*Characteristics.*—Abrupt vomiting and retching occur, both severe and frequent, but never feculent.

Chief Signs.—See page 468.

Acute Yellow Atrophy of the Liver.—*Characteristics.*—Vomiting is a constant symptom, and blood may be brought up. Jaundice with vomiting, diminution of the liver volume, and the presence of leucin and tyrosin in the urine, form a characteristic and unmistakable group of symptoms.

Chief Signs.—See page 734.

Yellow Fever.—*Characteristics.*—Irritability of the stomach is present from the very outset, and the vomited matter consists of the contents of the stomach, and subsequently of mucus and a grayish fluid. In the third stage of the disease the vomiting becomes more pronounced and in the severe cases is characterized by the presence of blood ("black vomit").

Chief Signs.—See page 734.

Less Common Causes.—Acute diverticulitis; trichiniasis; cholera; tuberculous meningitis; toxemia of pregnancy; cerebrospinal meningitis; phlegmonous gastritis; stricture of the small intestine; cerebral embolism; cerebral thrombosis; concussion of the spinal cord; sinus thrombosis; botulism; ptomaine poisoning; mesenteric thrombosis or embolism; acute cystitis; acute hepatitis; acute myocarditis; ovarian cyst (ruptured or twisted pedicle); pelvic peritonitis; splenic

infarction; renal infarction; poisoning by aconite, antifebrin, antipyrin, cantharides, copper, ergot, iodine, lead, mushrooms, nicotine, petroleum, phosphorus, silver, sulphonal, trional, veronal, conium; acute secondary anemia; coronary thrombosis.

CHRONIC VOMITING

(*Chronic Emesis, Including Nausea*)

(See also "Regurgitation," page 501; and "Hematemesis," page 498.)

Chronic vomiting is defined as that which recurs over a long period of time, or which, though having begun acutely, continues for some time. In other cases vomiting has occurred at more or less lengthy intervals, but the history is such that the present attack is easily linked with the infrequent previous ones. Vomiting must be distinguished from regurgitation, in which the material raised is brought up with neither nausea nor retching. This is considered under a special caption.

Pregnancy.—*Characteristics.*—Nausea, or nausea and vomiting are common in the early period, usually appearing about the end of the first month and disappearing spontaneously after six or eight weeks, although some patients suffer from it for a longer period. These symptoms usually come on in the earlier part of the day ("morning sickness"), and pass off in a few hours, although they occasionally persist longer or may occur at other times.

Chief Signs.—See page 502.

Carcinoma of the Stomach.—*Characteristics.*—Vomiting may occur even in the earliest stages, especially in cancer of the cardia and pylorus. With cancer of the body, vomiting may be absent. As a rule, the vomiting occurs only occasionally at the onset, but often becomes rapidly more frequent. With cancer of the cardia it occurs shortly after food; with pyloric cancer after an interval. In the early stages there is relief of pain after vomiting, but later this is very slight. Nausea becomes continuous. The vomitus contains a diminished amount of free hydrochloric acid or none at all, undigested food, often traces of blood, lactic acid, Boas-Oppler bacilli, sometimes sarcinae, and occasionally portions of the growth. (See also "Hematemesis," page 498).

Chief Signs.—Occurrence in late middle life; more or less constant pain in the epigastrium which may be referred to the shoulder and back; dyspepsia; anorexia (especially for meat); may be hematemesis; emaciation; anemia (yellow tint); may be palpable tumor; may be enlarged glands in the neck and left axilla; gastric analysis (absence of free hydrochloric acid, low total acidity, Boas-Oppler bacillus, sarcinae, bacteria, blood, organic acids); x-ray (irregular filling defect).

Gastric Ulcer.—*Characteristics.*—Vomiting is common. With an irritable stomach it occurs soon after eating and relieves the pain. In other cases it does not occur until later when the pain has reached a certain degree of severity. The vomitus consists of food, more or less digested according to the time which has elapsed after a meal. It almost always contains at least the normal amount of free hydrochloric acid, and blood may be present in varying quantities. (See "Hematemesis," page 498).

Chief Signs.—Pain in the epigastrium; anemia; some wasting; good appetite (but afraid to eat); dyspepsia; gastric analysis (usually hyperacidity); x-ray (filling defect of the stomach wall).

Dilatation of the Stomach with Pyloric Stenosis.—*Characteristics.*—The most characteristic symptom is the vomiting at intervals of enormous quantities of liquid and food, followed by relief, having no relation to meals, occurring several hours after eating or in the evening, and recurring at intervals of two or three days. The vomitus is sour-smelling, dark grayish in color, contains mucus and remnants of food, and on standing separates into three layers (froth, fluid, and food).

Chief Signs.—May be history of previous ulcer; chronic dyspepsia, with flatulence, increased appetite, and constipation (rarely diarrhea); wasting; dry skin; scanty urine; physical evidence of enlarged stomach (peristalsis, splashing, prominent abdomen, artificial inflation); may be palpable tumor at the pylorus; x-ray study.

Chronic Gastritis.—*Characteristics.*—Retching and vomiting are regarded as classical symptoms of this disease. The characteristic vomiting is that of the early morning or upon arising, a type of vomiting which takes place usually on a fasting stomach, the vomitus consisting of glairy mucus, bile, and if violent, some fresh traumatic blood. The vomiting is associated with nausea and epigastric discomfort. There may be only morning nausea.

Chief Signs.—Chronicity; flatulence; eructations; diminished appetite; furred tongue; bad taste in the mouth; muddy complexion; frontal headache; depression, irritability, giddiness; constipation; gastric analysis (diminished hydrochloric acid, copious mucus in some cases).

Pylorospasm (Functional).—*Characteristics.*—When the spasm becomes persistent and causes dilatation of the stomach with retention, periodic attacks of vomiting of the retained gastric contents occur. With the vomiting there is prompt relief of the pain. The gastric contents, as a rule, show an increase in acidity.

Chief Signs.—See page 469.

Achylia Gastrica.—*Characteristics.*—Vomiting occasionally occurs and may be so persistent as to endanger the patient's life.

Chief Signs.—May be epigastric pain; may be wasting; sore tongue; appetite variable; may be diarrhea, relieved by hydrochloric acid; may be pernicious anemia or gastric carcinoma; gastric analysis (complete absence of hydrochloric acid and ferments, very low organic acidity).

Pyloric Stenosis of Infancy (Hypertrophic Stenosis of the Pylorus).—*Characteristics.*—An infant who for the first two or three weeks of life has shown no signs of gastric disorder begins without evident cause to vomit, at first occasionally, but soon habitually. This vomiting in a short time becomes forcible, projectile, and most frequently occurs directly after feeding, all the food being generally expelled at one time. Some infants vomit regularly after each feeding, while others retain two or three feedings and then expel the whole amount. The vomited matter is at first chiefly food, later there is much mucus.

Chief Signs.—Occurrence between two and four weeks of age; visible gastric peristalsis; distention of the upper abdomen with retraction below; palpable pyloric tumor (over 60 per cent); progressive wasting; constipation; oliguria.

Continuous Hypersecretion (Chronic Gastrorrhoea).—*Characteristics.*—Vomiting often occurs at night or early in the morning at the height of a paroxysm of

pain, mitigating the severity of the pain. The greenish, watery, highly acid fluid evacuated from the stomach may amount to several liters.

Chief Signs.—Eructations of acid fluid, and gastric distress; pain at irregular intervals relieved by food; gastric analysis (large amounts of gastric juice long after meals; free hydrochloric acid increased, 90–100).

Chronic Parenchymatous Nephritis (*Chronic Bright's Disease*).—*Characteristics.*—Vomiting is frequently a distressing and serious symptom.

Chief Signs.—See page 515.

Chronic Interstitial Nephritis.—*Characteristics.*—Severe and uncontrollable vomiting may be the first symptom noted, and while usually regarded as a manifestation of uremia, may occur without any other indications.

Chief Signs.—See page 754.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—Nausea and vomiting are occasionally troublesome at an early period, but more commonly the patient feels simply nauseated at the sight of food or after eating. Vomiting more often results from a reflex action as the result of a paroxysm of coughing.

Chief Signs.—See page 412.

Pernicious Vomiting of Pregnancy.—*Characteristics.*—Ordinarily, pernicious vomiting begins as the simple nausea and vomiting of pregnancy. Constant vomiting may persist for weeks, the patient becoming markedly emaciated before the seriousness of the condition is appreciated. Later she begins to vomit “coffee-ground” material.

Chief Signs.—Existence of pregnancy; torpidity or excitation; coma; convulsions; slight jaundice; oliguria; casts or blood in the urine; rapid pulse; occasional fever; wasting.

Cirrhosis of the Liver (*Alcoholic*).—*Characteristics.*—Nausea and vomiting may occur, particularly in the morning.

See also “Hematemesis,” page 498.

Chief Signs.—See page 499.

Neurosis (“*Hysteria*”; “*Neurasthenia*”; “*Psychasthenia*”; “*Nervous Prostration or Breakdown*”).—*Characteristics.*—Vomiting may occur repeatedly day after day, sometimes after each meal, sometimes only once a day. A special feature is the absence of the preliminary nausea and of the straining efforts of the ordinary act of vomiting. It is rather a regurgitation. The condition may persist for weeks or months at home and the patient get well in a week in the hospital.

Chief Signs.—Occurrence in neurotic women; only slight wasting or loss of strength; exclusion of organic disease.

Pertussis (*Whooping-Cough*).—*Characteristics.*—In the spasmodic stage in a young child, vomiting is almost certain to follow a paroxysm if food has been recently taken.

Chief Signs.—See page 358.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics.*—The gastric muscular coat is irritable, and frequent attacks of vomiting may occur, especially during the crises of the disease, and in some cases become sufficiently severe and frequent to prove threatening. Sometimes gastric crises occur similar to those of tabes.

Chief Signs.—See page 450.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—Vomiting follows the pain of the gastric crisis, and may be quite independent of food. Nausea may be absent. The attacks usually last for several days, and tend to recur at intervals of weeks.

Chief Signs.—See page 468.

Diabetes Mellitus.—*Characteristics.*—Nausea, vomiting, and occasionally diarrhea are characteristics of the acidosis as it becomes more marked.

Chief Signs.—See page 344.

Chronic Myocarditis (*Cardiosclerosis*).—*Characteristics.*—Widespread coronary disease may show itself by attacks of vomiting which have no relation to the ingestion of food.

Chief Signs.—See page 449.

Cerebral Tumor.—*Characteristics.*—Vomiting is a common feature, and with headache and optic neuritis makes up a characteristic clinical picture. It is, however, a less common feature than headache and optic neuritis. It usually occurs independently of food, and is unassociated with the gastro-intestinal symptoms. Moreover, it is often unpreceded by nausea and thus has a curious "projectile" character. A change of posture of the head is sometimes enough to induce an attack of "cerebral vomiting." It is early and often very obstinate in growths of the posterior fossa (cerebellum and pons).

Chief Signs.—See page 446.

Cerebral Abscess.—*Characteristics.*—Following injury or operation the disease may run an acute course with fever, headache, delirium, vomiting, and rigors. In the chronic form, after a latent period of weeks or months following an injury, otorrhea, or local lung trouble, severe headache, vomiting, and fever set in, perhaps with a chill. This group of symptoms may continue intermittently. In abscess of the cerebellum, vomiting is common.

Chief Signs.—See page 446.

Cyclic Vomiting (*Periodic Vomiting of Children*).—*Characteristics.*—Four or five attacks of vomiting occur yearly, each lasting from one to three days. After a prodromal period of twelve to twenty-four hours marked by languor, dulness, dark rings under the eyes, anorexia, abdominal discomfort, and slight fever, the vomiting begins suddenly and is attended with great retching and distress, to be repeated every half hour or hour. The vomited matter consists of frothy mucus and watery material, frequently streaked with blood, and often containing bile.

Chief Signs.—Occurrence between the ages of two and ten years; history of previous attacks; exclusion of organic disease; presence of acetone, diacetic acid, beta-oxybutyric acid, sometimes lactic acid, and nearly always an increase of indican in the urine.

Henoch's Purpura.—*Characteristics.*—Vomiting is a common symptom and occurs from time to time with attacks of abdominal pain simulating intussusception, which occasionally occurs in this disease. The vomit may contain blood.

Chief Signs.—Occurrence in children; purpuric rash; abdominal colic; diarrhea or constipation; may be melena; tendency to relapses.

Addison's Disease.—*Characteristics.*—The disease may set in with attacks of nausea and vomiting, spontaneous in character. The gastric symptoms are

variable throughout the course of the disease, and occasionally they are absent.

Chief Signs.—See page 195.

Angioneurotic Edema.—*Characteristics.*—The local cutaneous attacks (edema) may be accompanied by signs of similar affection of the mucous membranes, such as vomiting, diarrhea, dyspnea, and even asphyxia from edema of the larynx and epiglottis.

Chief Signs.—See page 67.

Less Common Causes.—Chronic intestinal obstruction; carcinoma of the colon; carcinoma of the small intestine; dysentery; Ménière's disease; intermittent hypersecretion; eye-strain; peptic ulcer of the esophagus; gastric erosion; gastric hyperesthesia; tuberculosis of the cecum; paroxysmal hemaglobinuria; hydrocephalus; epilepsy; mediastinal tumor; Stokes-Adams disease; amyloid liver; Banti's disease; carcinoma of the liver; carcinoma of the bile-ducts; linitis plastica; hour-glass contraction of the stomach; hypertrophy of the pylorus; movable kidney (adherent); pellagra; portal obstruction; intestinal worms; ulcer of the intestine; enlarged bronchial glands; bronchiectasis; dysmenorrhea; ulcerative endocarditis; ectopic pregnancy; abscess of the liver; hydronephrosis; intercostal neuralgia; fibroid phthisis; lymphadenoma; mitral stenosis; oöphoritis; ovarian cyst; prostatitis; uterine displacements; enterogenous cyanosis; gangrene of the lung; gout; Milroy's disease; infantile hemoglobinuria; periarteritis nodosa; pernicious anemia; remittent fever; pyelitis; aneurysm of the abdominal aorta; cerebral syphilis; hemorrhagic pachymeningitis; leukemia; malaria; carcinoma of the pancreas; pancreatic cyst; subphrenic abscess; syphilis of the stomach; tuberculosis of the stomach; Raynaud's disease.

HEMATEMESIS

(Vomiting of Blood)

Hematemesis or gastrorrhagia must be distinguished from hemoptysis. In the former there is usually a history of previous gastric, hepatic, or splenic disease, the blood is brought up by vomiting, is usually clotted and mixed with particles of food, and has an acid reaction. Subsequent to the attack, tarry stools are passed. The vomiting of blood which has previously been swallowed from the nose, pharynx, or teeth, must be excluded. Neurotic patients sometimes try to deceive by vomiting blood which has been swallowed, or colored liquids. Again, the materials vomited may be colored by wine, juice of berries, etc., which give the vomitus the appearance of blood. Iron, bismuth, and bile may produce the blackened color of altered blood. Blows and wounds or the use of the stomach tube may cause hematemesis. Foreign bodies in the stomach may do likewise.

Gastric Ulcer.—*Characteristics.*—Hemorrhage from the stomach is a symptom of great importance, occurring in about 50 per cent of the cases. The amount of blood varies within wide limits. The bleeding may be copious (a quart or more), either liquid and arterial in color, or in large red clots, accompanied by the usual general symptoms of acute hemorrhage. If the quantity is small, however, or is gradually poured out into the stomach, the blood may remain in the presence of the acid gastric juice long enough to allow the hemoglobin to be converted into hematin, which will give to the vomitus the appearance of coffee-

grounds. Usually other symptoms have preceded the onset of hematemesis, but the vomiting of a large quantity of unaltered blood is very characteristic. Melena follows the hematemesis.

Chief Signs.—Pain in the epigastrium; vomiting; anemia; some wasting; good appetite (but “afraid to eat”); dyspepsia; gastric analysis (usually hyperacidity); x-ray (filling defect of the stomach wall).

Cirrhosis of the Liver (Alcoholic).—*Characteristics.*—Hematemesis may be one of the earliest symptoms. It is frequently profuse, very liable to recur, but seldom fatal. It is usually followed by melena. Gastric or esophageal varices are the cause.

Chief Signs.—Occurrence in middle age; history of alcoholism; liver small or enlarged, with surface hobnailed or smooth; hepatic facies; dyspepsia; slight or absent jaundice; ascites; spleen usually palpable; venules along the costal margin; may be slight fever; later, toxic symptoms.

Carcinoma of the Stomach.—*Characteristics.*—Hematemesis is less frequent than in ulcer, occurring in about 20 per cent. Bright red blood is rarely seen, the amount is slight, and the appearance is that of coffee-grounds.

Chief Signs.—See page 494.

Toxic Gastritis.—*Characteristics.*—More or less constant vomiting of blood and blood-stained mucus is a prominent symptom, associated with intense pain in the mouth, throat, and epigastrium. It occurs abruptly without previous symptoms of organic disease.

Chief Signs.—See page 493.

Splenic Anemia (Banti's Disease).—*Characteristics.*—There is a marked tendency to hematemesis in the later stages with cirrhosis of the liver. The hemorrhage may be of great severity. Gastric or esophageal varices are the cause in some cases, but by no means in all.

Chief Signs.—Insidious onset; progressive course; enlargement of the spleen; pallor; anemia (decreased red cells and hemoglobin, leukopenia, relative lymphocytosis); may be enlarged liver, ascites, and jaundice (Banti's syndrome).

Duodenal Ulcer.—*Characteristics.*—Hematemesis may occur, but much less commonly than with gastric ulcer. Melena always accompanies the hemorrhage.

Chief Signs.—See page 466.

Acute Gastritis.—*Characteristics.*—A frank hemorrhage never occurs, but the vomited matter always contains a little blood (blood-streaked mucus).

Chief Signs.—See page 491.

Chronic Gastritis.—*Characteristics.*—As with acute gastritis, frank hematemesis does not occur, but occasionally the mucus is mixed with a little blood.

Chief Signs.—See page 495.

Passive Congestion of the Liver.—*Characteristics.*—Hematemesis may occasionally occur.

Chief Signs.—See page 521.

Postoperative Hematemesis.—*Characteristics.*—Hematemesis may occur after severe abdominal operations, independently of any injury to the stomach or duodenum and without obvious cause.

Peptic Ulcers or Erosions of the Esophagus.—*Characteristics.*—Hematemesis may occur, but it is rarely extensive unless associated with varicosities. In case of

bleeding of any considerable extent, blood will be found if vomiting occurs, usually not in great quantities and commonly of a bright red color.

Chief Signs.—Pain on swallowing; may be tenderness over the sternum; tickling and choking sensations and collections of mucus in the mouth; may be anorexia and wasting; esophagoscopy.

Carcinoma of the Esophagus.—*Characteristics.*—Blood in greater or lesser amount may be regurgitated, or the initial hemorrhage may be very severe and even fatal. The usual absence of stomach contents in the regurgitated material is noteworthy. Fragments of the neoplasm may be mixed in it.

Chief Signs.—Occurrence late in life; dysphagia (later with pain); anorexia; cachexia; later, cough and pressure symptoms; regurgitation of large quantities of foul material if dilatation results from stricture; esophagoscopy.

Gastrostaxis.—*Characteristics.*—Hemorrhage from the stomach may occur in anemic young girls without any visible lesion of the mucosa. The case may be mistaken for one of ulcer, as there may be pain and the ordinary features of ulcer.

Chief Signs.—Occurrence in young girls; may be chlorosis; may be amenorrhea; exclusion of organic cause.

Yellow Fever.—*Characteristics.*—In the third stage of the disease, the vomiting becomes more pronounced and in the more severe cases is characterized by the presence of blood. It may be copious and forcible, with pain in the throat and abdomen. The vomitus is black in color due to altered blood (the "black vomit"). It is not necessarily a fatal symptom.

Chief Signs.—See page 747.

Chronic Myeloid Leukemia.—*Characteristics.*—Hematemesis may occur and prove fatal, sometimes even before the diagnosis is made. Epistaxis is the more common form of hemorrhage in this disease.

Chief Signs.—See page 524.

Malarial Cachexia.—*Characteristics.*—Severe hematemesis may be a prominent symptom, at times causing death.

Chief Signs.—History of malaria; secondary anemia; enlarged spleen; edema of the ankles; dyspnea on exertion; retinal hemorrhages; variable fever; leukopenia; presence of the malaria plasmodium in the blood during an acute attack.

Acute Yellow Atrophy of the Liver.—*Characteristics.*—Hematemesis may occur during the course of the vomiting. The vomitus is then black and it may resemble treacle due to the altered blood.

Chief Signs.—See page 747.

Thrombosis of the Portal Vein (Adhesive Pylephlebitis).—*Characteristics.*—This condition may give rise to sudden and profuse hematemesis.

Chief Signs.—Sudden onset of ascites, melena, and splenomegaly, together with the hematemesis.

Less Common Causes.—Hemorrhagic smallpox; black measles; malignant scarlet fever; cholemia (prolonged jaundice); hemophilia; esophagitis; foreign body in the esophagus; gumma of the esophagus; amenorrhea; rupture of an abdominal aneurysm into the stomach; Buhl's disease; cancer of the liver; cancer of the esophagus; chloroma; cholera; chronic interstitial nephritis; linitis plastica; dengue; dilatation of the stomach; diphtheria; gall-stones (ulcerating into the duodenum); swallowed glass; scurvy; intussusception; lymphadenoma; mediastinal

growth (perforating the esophagus and aorta); Hodgkin's disease; chlorosis; pernicious anemia; purpura hæmorrhagica; pressure on the portal vein by a tumor; carcinoma of the duodenum; atheroma; rupture of esophageal varices; erosion of a thoracic aneurysm into the esophagus; mitral stenosis; pancreaticoduodenal fistula; pyemia; syphilis of the stomach; syphilis of the liver; typhus fever; uremia; Weil's disease; splenomegaly (in general); gastric and duodenal erosions; ankylostomiasis; thrombosis of the splenic vein; Henoch's purpura; pellagra; syphilis hæmorrhagica neonatorum; morbus maculosus neonatorum; tuberculosis of the gastro-enteric tract; Hanot's disease; carcinoma of the pancreas; sarcoma of the stomach; benign gastric neoplasms; chronic cholecystitis (with associated hepatitis).

REGURGITATION

(See also, "Regurgitation of Fluid through the Nose," page 166; and "Chronic Vomiting," page 494.)

Regurgitation is the bringing up of small quantities of food from the stomach or esophagus, whence they may or may not be ejected. The returned matter is undigested, of alkaline reaction if from the esophagus, acid if from the stomach, and may be diluted freely with mucus. There is no retching as in vomiting.

Esophagitis.—*Characteristics.*—More or less secretion is discharged into the buccal cavity, and its character is important in determining its cause. In simple catarrhal processes, the secretion is largely mixed with saliva, but contains blood-cells. Pus will occur in the phlegmonous processes, and where necrosis of the membranes is taking place particles of tissue may be discharged, which in the case of corrosive poisoning may have a diagnostic appearance. Pus and blood are present if due to a foreign body.

Chief Signs.—History of swallowing a foreign body or a corrosive poison; pain on deglutition; dull pain beneath the sternum; asthenia and wasting; passage of a bougie or stomach tube; esophagoscopy (swollen, injected mucous membrane).

Stricture of the Esophagus (*Fibrous or Carcinomatous*).—*Characteristics.*—Regurgitation follows the accumulation of food material in the dilated portion of the tube above the stricture or from a pulsion diverticulum. Enormous quantities of foul-smelling, alkaline material may be raised a short time after eating. Pieces of new growth may be found.

Chief Signs.—History of corrosive poisoning if fibrous; dysphagia; substernal oppression or actual pain; passage of a bougie (in experienced hands); x-ray study; esophagoscopy.

Simple Diverticulum of the Esophagus.—*Characteristics.*—Regurgitation of the material filling the sac ultimately occurs, but not with force in diffuse dilatation. Not all of the matter is ejected at a time, but enormous quantities of foul-smelling substance may be expelled. The material may be reswallowed, some passing into the stomach, some back into the diverticulum.

Chief Signs.—Dysphagia; sense of fullness in the neck; pressure symptoms with increase in size (dyspnea, strangulation, aphonia); dulness on percussion; fluoroscopy and x-ray study.

Traction Diverticulum of the Esophagus.—*Characteristics.*—Regurgitation occurs after eating.

Chief Signs.—Usually evidence of necrosing tuberculous glands in the mediastinum; dysphagia; sense of substernal weight; dyspnea; fluoroscopy and x-ray study.

Gastric Ulcer.—*Characteristics.*—Regurgitation may occur and prove quite troublesome. It is accompanied by “heartburn.”

Chief Signs.—See page 498.

Gastric and Duodenal Erosion.—*Characteristics.*—Regurgitation may follow upon eructations of acid gas.

Chief Signs.—Slight pain or pylorospasm; presence of fragments of superficial mucosa and macroscopic or occult blood in the gastric contents; negative x-ray study.

Neurosis.—*Characteristics.*—When regurgitation is purely neurotic the act is involuntary and usually continues throughout the entire period of digestion. The longer after the ingestion of food it takes place, the more acid is the regurgitated material. The regurgitation may occur only after certain meals or after the ingestion of special types of food. Spasm of the esophagus is not infrequent in neurotics. Then there is sudden regurgitation during or soon after a meal without nausea and with immediate relief of the substernal discomfort. The material ejected contains no elements of gastric fluids. Cardiospasm is another common type of spasm attending a neurosis and causing regurgitation. There is regurgitation following violent efforts to swallow and force the food into the stomach. It may be acute or chronic. As a rule semisolids and fluids may be swallowed with some degree of ease.

Chief Signs.—Neuropathic symptoms, and emotional elements while eating or attempting to swallow; dysphagia and substernal distress (in spasm); may be wasting; elimination of organic disease.

Merycism (Rumination).—*Characteristics.*—This condition apparently begins with the regurgitation of food. As a result of this a certain agreeable sensation is experienced. Gradually the patient begins to reswallow the regurgitated material until finally a habit is formed which ultimately becomes involuntary. Regurgitation may take place after each meal, or only occasionally, soon after the meal, or some hours after.

Chief Signs.—Occurrence in high-strung individuals, often several members of the same family; pleasurable sensation; absence of wasting; elimination of organic disease.

Less Common Causes.—Carcinoma of the stomach; dilatation of the stomach; gastritis; carcinoma of the esophagus; aneurysm of the arch of the aorta; bulbar paralysis; myasthenia gravis; mediastinal tumor; mediastinal abscess; Hodgkin's disease; tuberculous adenitis; goiter; pericarditis with effusion.

GENERAL ABDOMINAL SWELLING

Pregnancy.—*Characteristics.*—There is progressive increase in the later months with general enlargement. The abdomen is roughly pyriform in shape in the erect position, with tapered end below. The profile is symmetrical, the flanks rounded. The navel may pout.

Chief Signs.—Amenorrhea; palpation of the fetal parts; movement; ballottement; fetal heart sounds; enlarged breasts with colostrum; soft cervix.

Obesity.—*Characteristics.*—The abdomen protrudes as a symmetrical globular

enlargement which depresses the navel, accentuates the cutaneous flexion-folds, arches the pit of the stomach, and encroaches upon the flanks and pubes; or the abdomen, if relaxed and flabby, is pendulous and creased by transverse furrows. The subcutaneous fat may be rolled between the fingers.

Ascites.—*Characteristics.*—If the effusion is moderate there is slight bulging of the flanks with flattening of the belly's summit in the supine position, and unnatural fullness of the lower abdomen when the erect posture is assumed. The dependent parts afford a dull or flat percussion sound which shifts with the posture. Intestinal tympany is uppermost. If the effusion is large the abdomen is smooth, tense, and uniformly globular. A distinctive fluctuation wave is obtainable. The navel may protrude. The maximum circumference is at the navel, the base sags. The superficial veins may be enlarged, the current flowing upwards. Paracentesis usually brings a clear, amber fluid (in some cases hemorrhagic or chylous).

For causes of Ascites, see page 515.

Tympanites (*Meteorism; Gaseous Distention*).—*Characteristics.*—The abdomen resembles a symmetrically ballooned sphere, tympanitic over all on percussion, without change of contour with change of body posture. The walls are taut, smooth, and shiny. Hepatic and splenic dullness are obliterated. The navel is flat or protrudes.

For causes of Tympanites, see page 518.

Rickets (*Rachitis*).—*Characteristics.*—The "pot-belly" of rickets presents a uniform enlargement of the abdomen, generally tympanitic, and often as tense as a drum-head. Moderate dilatation of the stomach and colon is present, with moderate enlargement and downward displacement of the liver and spleen.

Chief Signs.—See page 374.

Achondroplasia (*Chondrodystrophy*).—*Characteristics.*—Lumbar lordosis makes the abdomen prominent.

Chief Signs.—See page 550.

Intestinal Obstruction (*Acute or Chronic*).—*Characteristics.*—Distention of the abdomen always develops and is extreme when the large bowel is involved. If the obstruction is in the ileocecal region the small intestines are distended and the central portion of the abdomen is prominent. Visible waves of peristalsis are present in thin-walled abdomens.

Chief Signs.—See page 475.

Retention of Urine (*Distention of the Bladder*).—*Characteristics.*—Bulging and dullness are distinctly located in the hypogastrium with the convex aspect directed outward. The fullness may reach above the navel.

Chief Signs.—History of retention; acute nature of the case; pain on pressure with increased desire to urinate; dribbling of urine; disappearance after catheterization.

Enteroptosis.—*Characteristics.*—The belly is pendulous, and there may be a gourdlike sagging in the erect posture, the anterior abdominal wall sloping gently downward from the epigastrium to the navel, whence it bulges in all directions into a huge flabby paunch overlapping the pubes, and forming deep subcutaneous folds laterally. The navel depression is effaced. Silvery striations are present. With the patient on his back the outlines of the stomach and intestines may be visible from thinning and relaxation of the walls.

Chief Signs.—Two groups: in one there is loss of normal supports from pregnancies or ascites; in the other the patient is usually a young female of spare habit in which there is a history of acute illness with wasting and complaint of dyspepsia, throbbing in the abdomen, dragging pains or weakness in the back, inability to work (“neurasthenia”); x-ray.

Gastropptosis.—*Characteristics.*—In the erect posture the abdomen bulges forward in a symmetrical curve from the infracostal line to the pubes, the flanks being flat and hollow. The epigastrium is deepened unless the stomach is dilated.

Chief Signs.—As in enteroptosis, see above.

Tuberculous Peritonitis.—*Characteristics.*—Ascites and meteorism may cause general distention.

Chief Signs.—See page 516.

Large Ovarian Cyst.—*Characteristics.*—The abdomen is usually swollen with an eminence in front, but the umbilicus not pushed out. There is dulness in front with resonance in the flanks. Fluctuation is limited to the dull areas and not shifting as in ascites.

Chief Signs.—See page 513.

Splenomegaly (Large).—*Characteristics.*—The enlargement is smooth, uniform, and painless. The spleen may reach to the navel or the anterior superior spine of the ilium, and the organ may occupy the whole of the left side of the abdomen causing the abdomen to be generally prominent.

For causes of Splenomegaly, see page 523.

Cretinism.—*Characteristics.*—The abdomen is swollen and pendulous and an umbilical hernia is almost always present.

Chief Signs.—See page 41.

Dilatation of the Stomach.—*Characteristics.*—The abdomen may be large and prominent, the greatest projection occurring below the navel in standing posture. The outline of the dilated stomach may be seen and succussion sounds elicited. The epigastrium is concave.

Chief Signs.—May be neurotic symptoms; nervous dyspepsia; vomiting of enormous quantities; physical signs (clapotage; distention of the stomach with air; may be evidence of pyloric stenosis—tumor or ulcer); x-ray study.

Chronic Intestinal Indigestion (Celiac Disease).—*Characteristics.*—The abdomen is large, protruding, tense, and tympanitic.

Chief Signs.—Occurrence in children; malnutrition; alternate constipation and diarrhea; excessive intestinal fermentation with flatulence; nervous symptoms.

Idiopathic Dilatation of the Colon (Hirschsprung's Disease).—*Characteristics.*—The abdomen is generally prominent and tympanitic. It may be almost spherical with the greatest circumference just above the navel. The colon may be recognizable in the left and upper abdomen, and during the colicky attack is more distinct, so that even separate coils and peristalsis may be recognizable.

Chief Signs.—Occurrence in childhood; obstinate constipation with fair digestion and nutrition; attacks of vomiting, colic, and diarrhea, with reduction in size; x-ray study.

Sarcoma of the Kidney.—*Characteristics.*—In children the tumor may grow to an enormous size, so that in five or six months it may nearly fill the abdomen, causing great enlargement. The surface of the tumor may be lobulated and irregu-

lar, or smooth, and although solid, it is sometimes so soft as to give an obscure sensation of fluctuation.

Chief Signs.—See page 527.

Less Common Causes.—Amyloid disease; appendicitis; hypertrophic cirrhosis of the liver; congenital dislocation of the hips; typhoid fever; Mongolian idiocy; myxedema; pancreatic disease; phantom tumor; pneumoperitoneum; tabes mesenterica; retroperitoneal sarcoma (in children).

SWELLINGS IN THE ABDOMINAL WALL

Abscess.—*Characteristics.*—The swelling has the usual characteristics of an abscess elsewhere, namely pain, tenderness, heat, redness, and fluctuation.

Inguinal Hernia.—*Characteristics.*—There is a soft swelling at the inner third of Poupart's ligament. It may disappear on lying down or be returned to the abdomen by manipulation. Straining causes an increase in size and there is an impulse on coughing. Gurgling sounds may be heard if intestine is in the sac, and there is tympany on percussion unless only the omentum is present, when there is dulness. The enlarged external inguinal ring may be felt by the finger from below.

Umbilical Hernia.—*Characteristics.*—In the adult the hernia begins as a flabby tumor about as large as the terminal joint of the finger and covered by the normal skin of the umbilicus. It may grow to larger size. The edge of the ring may be felt as a thick border. In infants the hernia rarely grows to any great size. These hernias are common in stout persons of middle age. The hernia is usually irreducible, becomes gradually larger, and gives an impulse on coughing. Its contents are omentum or omentum and intestines.

Ventral Hernia.—*Characteristics.*—There is a soft, reducible swelling in any portion of the abdominal wall, usually at the site of the scar of a previous abdominal operation. The edges of the opening can usually be easily felt, and coughing causes a marked bulging. The size of a ventral hernia may be great.

Epigastric Hernia.—*Characteristics.*—One or more, usually small, subcutaneous swellings are felt along the course of the linea alba between the umbilicus and the ensiform cartilage.

Chief Signs.—Occurrence in healthy, hard-working men; may be concomitant lipoma; may be attacks of epigastric pain and vomiting, or even intestinal obstruction.

Lipoma.—*Characteristics.*—The tumor may occur in any part of the abdominal wall. It is spherical, lobulated, semifluctuating, and the skin is dimpled when an attempt is made to lift it from the tumor. Small lipomata above the umbilicus close to the middle line may precede or accompany hernia, for which they are easily mistaken.

Fibroma (Desmoid).—*Characteristics.*—Three-fifths of all cases occur in women during pregnancy. They are usually single but may be multiple. They have a predilection for the lower half of the abdomen, especially the right side. Originally spherical, they may be compressed into an oval or flattened shape. Their rate of growth may be slow, or when coming during pregnancy, rapid. They may shrink after parturition. The usual size is that of an egg or a walnut, but larger ones are seen. The typical desmoid is hard and solid.

Granuloma of the Umbilicus.—*Characteristics.*—Excessive granulation sometimes follows the removal of the stump of the umbilical cord. The mass of granulations gradually assumes a polypoid shape.

Omphalitis.—*Characteristics.*—An abscess may form in the navel as a result of the irritation which is produced in a deep umbilicus by the dirt and secretions which may collect there.

Umbilical Cyst.—*Characteristics.*—A semifluctuating tumor below the umbilicus and containing sebaceous material may be due to a urachus which has not completely closed in its course from the navel to the bladder.

Cyst of the Vitello-intestinal Duct.—*Characteristics.*—A small, bright red, globular mass appears to arise from the umbilicus of a baby or young child, and usually has a distinct pedicle but may be sessile.

Secondary Malignant Neoplasms (*Neoplastic Peritonitis*).—*Characteristics.*—Small secondary nodules may appear quite early at the umbilicus or in the round ligament just above it. This may occur even before the primary tumor has given rise to any definite signs or symptoms.

Chief Signs.—See page 516.

Less Common Causes.—Sebaceous cyst; carbuncle; subphrenic abscess or perigastric abscess (inflammatory thickening of the round ligament and umbilicus); angioneurotic edema; hepatic abscess (redness and swelling in the right hypochondrium); appendicular abscess (infiltration of the abdominal wall); Hodgkin's disease, acute (localized glandular deposits); lymphosarcoma, acute (localized glandular deposits); dermoid cyst (umbilical region); nevi; angioma hypertrophicum; papilloma; fibroma molluscum; cutaneous sarcomata; fibromyxoma; myoma; primary carcinoma; echinococcus cyst; actinomycosis.

SWELLING IN THE EPIGASTRIUM

Carcinoma of the Stomach.—*Characteristics.*—There may be a palpable tumor in the epigastric, umbilical, or hypochondriac region, according to the portion of the stomach involved. This is a late sign, however. The mass is usually hard, sometimes nodular. It descends with inspiration, may appear and disappear due to peristalsis, and transmits the pulsations of the aorta. Tumors of the pylorus are most movable. Percussion over the mass yields a flat tympany. Pain on palpation is common. In addition, there may be epigastric fullness, inequality of the infracostal grooves, visible peristalsis, a wide area of aortic pulsation, and subcutaneous nodules or small masses about the navel.

Chief Signs.—See page 494.

Dilatation of the Stomach.—*Characteristics.*—In some instances the outline of the stomach can be seen, the small curvature a couple of inches below the ensiform cartilage, and the greater curvature passing obliquely from the tip of the tenth rib on the left toward the pubes and then curving upward to the right costal margin. Active peristalsis may be seen, the waves passing from left to right, occasionally the reverse. In stenosis a tumor may be evident at the pylorus. The resistance of a dilated stomach is peculiar, resembling an air-cushion. Bimanual palpation elicits a splashing sound (clapotage). On percussion there is a tympanitic note over the greater portion of the distended stomach, a flat note in the dependent part.

Chief Signs.—See page 504.

Tuberculous Peritonitis.—*Characteristics.*—An irregular rope or mass may be felt in the epigastrium or extend into any of the regions of the abdomen. It is made up of matted inflammatory tissue and exudate, rolled-up omentum, fecal accumulations, or glands.

Chief Signs.—See page 465.

Carcinoma of the Pancreas.—*Characteristics.*—A palpable tumor is rare, but occasionally there may be an indistinct, deeply-seated mass felt in the epigastrium. The stomach, or stomach and colon lies in front, and there is practically no movement on respiration. The pulsations of the aorta are often transmitted.

Chief Signs.—See page 468.

Pancreatic Cyst.—*Characteristics.*—There is a deeply-seated, smooth, rounded tumor, possibly giving a sensation of fluctuation. At first it occupies the lower epigastrium or hypochondriac region, but if it becomes very large it may fill the whole upper part of the abdomen. It is usually in the median line or slightly to the left. It is often movable, but rarely moves with respiration. The stomach usually lies above it and the colon below, but it may be above or behind the stomach, or even below the colon. Its contents are a reddish, alkaline fluid containing blood, cholesterolin, and often proteolytic ferments.

Chief Signs.—See page 469.

Subphrenic Abscess (*Subdiaphragmatic Abscess*).—*Characteristics.*—Following a perforated gastric ulcer of the posterior wall an abscess may form in the lesser peritoneal sac, and may give rise to a tumor, dull on percussion, presenting below or occasionally above the stomach. Such a tumor, however, is often absent.

Chief Signs.—See page 469.

Aneurysm of the Abdominal Aorta.—*Characteristics.*—There is an epigastric tumor which has an expansile pulsation and which may be grasped in the hand when the patient assumes the knee-chest position, a transmitted pulsation thus being eliminated. The mass is usually fixed.

Chief Signs.—Thrill; bruit; neuralgic pain in the sides and back; dyspnea; retardation of the femoral pulse; x-ray.

Omental Cyst.—*Characteristics.*—There is a freely movable, rather superficial tumor surrounded by tympany on all sides, and not connected with the pelvis.

Chief Signs.—See page 511.

Less Common Causes.—Carcinoma of the duodenum; Hodgkin's disease; lymphosarcoma; linitis plastica; hypertrophic stenosis of the pylorus; hair ball in the stomach; sarcoma of the stomach; gumma of the liver (left lobe); phytobazoar.

SWELLING IN THE RIGHT HYPOCHONDRIMUM

Hepatomegaly.—*Characteristics.*—Any extensive degree of enlargement of the liver is manifested by undue prominence at the right costal margin with fullness in the right hypochondriac and epigastric regions, which, in cases of excessive hepatic enlargement, may extend to the entire anterior abdominal wall. There is rarely any upward extension of hepatic dullness, and the intercostal spaces are not obliterated. The organ rises and falls with respiration. Its lower border can usually be easily palpated unless there is tympanites or marked ascites.

For causes and characteristics of Enlargement of the Liver, see page 520.

Acute Cholecystitis.—*Characteristics.*—Frequently when there is no muscular rigidity, one can feel the rounded fundus of the gall-bladder projecting below the inferior margin of the liver. Usually the swelling is small, but occasionally it may be of considerable size and bulge well into the right iliac fossa or into the umbilical region. It is a tense globular swelling with its long axis in the line between the ninth right costal cartilage and the umbilicus, is movable from side to side, and freely movable with respiration. It is definitely more anterior than posterior, and percussion does not reveal any tympanitic note between the liver dulness and the tumor.

Chief Signs.—See page 471.

Cholelithiasis (Gall-Stones).—*Characteristics.*—Obstruction of the cystic duct frequently leads to dilatation of the gall-bladder (hydrops vesicæ felleæ), which may reach an enormous size. Enlargement of the gall-bladder is described above (see acute cholecystitis).

Chief Signs.—See page 471.

Chronic Pancreatitis.—*Characteristics.*—On deep pressure the head of the pancreas may sometimes be felt. More often is found an enlarged gall-bladder.

Chief Signs.—See page 467.

Carcinoma of the Pancreas.—*Characteristics.*—This condition is usually associated with dilatation of the gall-bladder, which may reach a very large size. The characteristics of the swellings are described above (see acute cholecystitis). In some instances the carcinoma itself may be felt as a deep-seated mass in the epigastrium.

Chief Signs.—See page 468.

Carcinoma of the Gall-Bladder.—*Characteristics.*—A tumor can usually be detected extending diagonally downward and inward toward the navel, variable in size, occasionally very large, and most often very firm and hard. It is due either to great distention of the gall-bladder or to involvement of contiguous parts.

Chief Signs.—See page 472.

Carcinoma of the Lymph Glands.—*Characteristics.*—Carcinomatous glands resulting from metastasis from primary cancer of the stomach and other abdominal organs may be palpable in the right hypochondrium and epigastrium as nodulated chains or masses usually hard and rounded. When involving the lymph glands of the liver the mass may cause occlusion of the bile-ducts, and dilatation of the gall-bladder ensues.

Chief Signs.—Occurrence in late middle life; progressive jaundice; history of evidence of the primary growth; involvement of the clavicular lymph glands; may be enlarged liver.

Carcinoma of the Bile-Ducts.—*Characteristics.*—The gall-bladder is enlarged and usually palpable due to obstruction of the common duct by the malignant disease. The tumor itself is rarely palpable.

Chief Signs.—Occurrence in late middle life; insidious onset; progressive jaundice; palpable liver; pain absent or slight; cachexia.

Fecal Impaction.—*Characteristics.*—Scybala may accumulate in the hepatic flexure of the colon. They may be recognized by their general shape, by the ease with which they can be molded or indented by pressure with the fingers, and by their being dispersed by a purgative.

Chief Signs.—See page 478.

Subphrenic Abscess (*Subdiaphragmatic Abscess*).—*Characteristics.*—An abscess in the right anterior (intraperitoneal) pouch, resulting usually from a ruptured appendix or perforated duodenal or gastric ulcer, may be detected as a palpable mass coming from under the right costal margin, and not extending beyond the midline, but with a curved outline to the left due to bulging of the falciform ligament. It is dull on percussion, does not move on respiration, does not extend downward below the normal hepatic limits, and may cause the diaphragm to be pushed up with dulness and deficient breath sounds at the base of the lung.

Chief Signs.—See page 469.

Less Common Causes.—Carcinoma of the hepatic flexure; tuberculosis of the colon; intussusception.

SWELLING IN THE LEFT HYPOCHONDRIUM

Splenomegaly.—*Characteristics.*—The tumor comes down from under the left costal margin in direct contact with the anterior abdominal wall, descends on inspiration, has a smooth surface, and a notched upper and inner margin. Resonance is usually obtainable between the posterior aspect of the tumor and the spine.

For causes of Splenomegaly, see page 523.

Fecal Impaction.—*Characteristics.*—Fecal impactions are prone to form at the splenic flexure of the colon in constipated elderly women. They form irregular, movable, and moldable masses which disappear after purgation or enemas.

Chief Signs.—See page 478.

Subphrenic Abscess (*Subdiaphragmatic Abscess*).—*Characteristics.*—Perforation of a gastric ulcer may result in the formation of an abscess in the left anterior (intraperitoneal) pouch, also known as the perigastric or perisplenic pouch. A palpable mass may be detected coming from under the left costal margin, dull on percussion, and not moving on respiration. It does not extend beyond the midline but presents a curved outline to the right. The diaphragm may be pushed up, causing dulness and deficient breath sounds at the base of the left lung with upward displacement of the heart.

Chief Signs.—See page 469.

Less Common Causes.—Intussusception; carcinoma of the splenic flexure; tuberculosis of the splenic flexure.

SWELLING IN THE UMBILICAL REGION

Umbilical Hernia.—*Characteristics.*—In infants this hernia is usually of small size, but in stout middle-aged persons it may attain considerable proportions. For description, see page 505.

Dilatation of the Stomach.—*Characteristics.*—A dilated stomach may occupy most of the umbilical region. For description, see page 506.

Diastasis Recti (*Divarication of the Recti Muscles*).—*Characteristics.*—A median line bulging forward of the abdominal viscera in a moundlike prominence reaching from the ensiform cartilage to the symphysis pubis may appear when the

patient, lying down, folds the arms and raises the head and shoulders. The recti muscles are felt to be separated.

Chief Signs.—Usually history of multiple pregnancies; visceroptosis; may be diffuse umbilical pain.

Tuberculous Peritonitis.—*Characteristics.*—Tumorlike projections may be detected in the plastic form in which there is little or no ascites. These masses consist of indurated or coiled-up omentum, encysted exudate, or enlarged mesenteric glands.

Chief Signs.—See page 516.

Fecal Impaction.—*Characteristics.*—A sausagelike doughy mass above the navel may sometimes be palpated if there is much accumulation in the transverse colon.

Chief Signs.—See page 478.

Neurosis.—*Characteristics.*—Phantom tumors occur. They are apparently solid, and often appear in the neighborhood of and just below the umbilicus. Pregnancy may be simulated at the menopause (pseudocyesis); in such cases the condition is probably due to local contractures of the diaphragm and abdominal muscles. In some cases intestinal obstruction may be simulated, with pain, vomiting, distention, and inability to pass feces or gas; these are probably due to spasm of the bowel. The tumors entirely disappear under complete anesthesia.

Chief Signs.—Occurrence in neurotic persons, especially females; exclusion of pregnancy or organic disease

Chronic Proliferative Peritonitis.—*Characteristics.*—Various masses and tumors may be felt. The abdomen presents an irregular and variable distention with increased and doughy resistance.

Chief Signs.—See page 516.

Carcinomatous Mesenteric or Retroperitoneal Glands.—*Characteristics.*—Secondary involvement of these glands from a malignant abdominal tumor may cause a palpable mass in the middle of the abdomen, the nature of which is usually obscure.

Chief Signs.—Those of the primary growth.

Carcinomatous Peritonitis.—*Characteristics.*—Masses of growth may be felt if the effusion is not too great. The omentum may be rolled up also, giving a ropelike feel across the abdomen. In some cases adhesions and encysted effusions may cause other palpable masses. Multiple nodules may be felt through the abdominal wall.

Chief Signs.—See page 516.

Mesenteric Cyst.—*Characteristics.*—There is a round, definitely outlined, smooth and regular (except hydatid), tense, possibly fluctuating mass palpable in the middle line near the umbilicus. The tumor possesses great mobility in circular directions and especially from side to side. It is dull on percussion with a resonant area in front from overlying coils of intestine. These cysts vary in size from a few inches upward. Large cysts may be fixed by adhesions and completely dull.

Chief Signs.—May be pain and constipation from enlarging size; may be gastro-enteritis; may be rapid emaciation; may be intestinal obstruction; duration usually many years.

Retroperitoneal Cyst or Tumor.—*Characteristics.*—The cyst resembles that of

a mesenteric cyst (see above) but is fixed. It may easily be mistaken for a pancreatic cyst. A sarcoma presents an immobile tumor, extending forward near the midabdomen, and usually crossed by a coil of gut; it is usually hard, but pseudocysts are common; it may attain great size in children.

Chief Signs.—As in mesenteric cyst (see above).

Omental Cyst.—*Characteristics.*—These are freely movable masses lying below the transverse colon and in immediate relation with the anterior abdominal wall, in front of the mass of small intestine. Cysts are either single or multiple. There is tympany on all sides.

Chief Signs.—Only those of pressure if very large; emaciation if malignant; may be pain.

Tabes Mesenterica (*Tuberculosis of the Mesenteric Glands*).—*Characteristics.*—In some cases there is a palpable mass situated centrally or near the cecum.

Chief Signs.—Occurrence in children; enlarged abdomen; constipation; may be attacks of diarrhea; variable fever; wasting; anorexia; anemia; von Pirquet test.

Less Common Causes.—Henoch's purpura; enchondroma; aneurysm of the abdominal aorta; carcinoma of the transverse colon; intussusception; carcinoma of the small intestine; volvulus of the omentum; tumor of the omentum; mesenteric fibrolipoma; retroperitoneal abscess; Hodgkin's disease (with retroperitoneal glandular involvement); lymphosarcoma; urachal cyst; hydronephrosis; hypernephroma; sarcoma of the kidney.

SWELLING IN THE FLANK OR LUMBAR REGION ANTERIORLY

(*Iliocostal Space, Right or Left*)

(See also "Deep-Seated Swelling in the Lumbar Region," page 547.)

Intussusception.—*Characteristics.*—The ascending colon can be felt as a sausage-shaped tumor in the ileocecal and ileocolic varieties. The tumor may at first be felt only in the right flank, later it extends across the abdomen above the umbilicus, and finally down the left flank and into the pelvis. The tumor becomes harder and more prominent with each recurrence of the griping pain.

Chief Signs.—Occurrence usually in a plump, healthy infant under one year; sudden onset; intermittent abdominal pain; initial vomiting, ceasing later and rarely fecal; tenesmus with the passage of blood and mucus; death in from one to eight days without treatment.

Carcinoma of the Colon.—*Characteristics.*—When the tumor involves the ascending or descending colon, often a palpable tumor may be felt. The mass may be grasped bimanually, is movable, and is resonant on percussion.

Chief Signs.—See page 478.

Nephroptosis (*Movable, Displaced, or Floating Kidney*).—*Characteristics.*—Bimanual palpation may detect a firm, rounded, movable body, of reniform shape in the loin, which descends on deep inspiration. Pressure may cause sickening pain. In lesser degrees of movability the lower pole of the kidney may be felt on bimanual palpation just at the end of a deep inspiration; during expiration something smooth and round may then be felt to slip upward toward the ribs. The main characteristics are the size, shape, and slippery feel, the sickening pain produced by pressure, and the possibility of replacement into the kidney fossa.

Chief Signs.—Sense of dragging or discomfort in the loin, or even pain or neuralgia; neurotic symptoms; dyspepsia; Dietl's crises (pain, chill, nausea, vomiting, fever, collapse, accompanied by anuria and followed by polyuria); intermittent hydronephrosis; x-ray.

Enlargement of the Kidney.—*Characteristics.*—Renal enlargement from whatever cause presents certain characteristics which fix the nature of the swelling definitely as one involving the kidney. The tumor usually retains the shape of the kidney and projects forwards and downwards, rarely posteriorly. The area of dulness to percussion is continuous from the lateral aspect of the swelling to the midline posteriorly. The large intestine runs across its front; hence an area of resonance can usually be obtained in front of the swelling. It does not descend so freely with deep inspiration as a splenic or hepatic tumor. It can be felt with ease bimanually, and can be pushed back into the loin. A renal tumor may be movable downward or inward, or may be fixed in the loin. Resonance between the tumor and the liver or ribs may be elicited. A varicocele may be developed on the side of the tumor.

For causes of Enlargement of the Kidney, see page 526.

Less Common Causes.—Riedel's lobe of the liver; thickened ascending colon (pericolitis, perityphlitis, typhlitis, appendicitis, hyperplastic tuberculosis, mucomembranous colitis, dysentery, ulcerative colitis); fecal impaction; enlarged gall-bladder; ovarian cyst or tumor; splenomegaly; tumor of the suprarenal gland; tumor of the small intestine; tumor of the omentum; chronic intussusception.

SWELLING IN THE ILIAC REGION

(*Right or Left*)

(See also "Swelling in the Inguinal Region or Groin," page 535; and "Abnormalities Noted by Digital and Bimanual Palpation," page 582.)

Appendiceal Abscess.—*Characteristics.*—If the abscess has localized in the iliac fossa, the roof of the mass is formed by the abdominal wall, and the mass is palpable as an increase in resistance or a definite tumor, providing there is sufficient relaxation of the rectus muscle. If the abscess is in the pelvis, the right flank, or behind the colon, it is usually not palpable through the abdominal wall; a pelvic abscess may be palpable through the rectum and vagina.

Chief Signs.—Those of acute appendicitis, followed by an aggravation of the general symptoms and local tenderness; increased leukocytosis; may be sweats.

Fecal Impaction.—*Characteristics.*—An irregular lumpy tumor may be felt in the left iliac fossa when the accumulation is in the sigmoid. The tumor may pit on pressure and may be made to disappear with copious enemata.

Chief Signs.—See page 478.

Carcinoma of the Colon (Sigmoid or Cecum).—*Characteristics.*—There may be a palpable resonant tumor in the iliac fossa. The mass is hard, may be irregular and nodular, but cannot be altered in shape by pressure as with fecal tumors, although there may be scybala behind the cancer due to constriction of the bowel. The tumor may, therefore, vary in size according to whether a mass of feces is impacted above it or removed by purging or enemata.

Chief Signs.—See page 478.

Acute Diverticulitis.—*Characteristics.*—Localized abscess formation is not uncommon in the left iliac region closely resembling an appendiceal abscess in the right side.

Chief Signs.—See page 477.

Chronic Diverticulitis (*Peridiverticular Fibrous Hyperplasia*).—*Characteristics.*—A firm tumor forms in the left iliac fossa, very similar to carcinoma of the sigmoid. The fibrous tissue may be an inch or more in thickness. Chronic proliferative peritonitis may develop, the result resembling a “tuberculous cecal tumor.” A large diverticular pouch may produce a firm oval tumor, which, between acute exacerbations, diminishes in size when the sac is temporarily freed of gas, feces, or pus.

Chief Signs.—Occurrence in middle age or later (usually stout persons with constipation); chronic obstipation with attacks of diarrhea; periodic exacerbations of pain, tenderness, rigidity, fever, gas retention, and pus in the urine or feces; absence of wasting and cachexia; absence of blood in the feces; sigmoidoscopy (mucosa smeared with pus); x-ray study.

Spastic Constipation.—*Characteristics.*—Careful palpation in the left iliac region will reveal the tightly contracted descending and sigmoid colon, which can be rolled from side to side like a rope.

Chief Signs.—Neurotic symptoms; delay in fecal discharge, colic preceding defecation; empty, contracted rectum; x-ray study.

Ovarian Cyst.—*Characteristics.*—When of moderate size, a globular or ovoid tumor, smooth and regular in outline, giving a fluid feel or actual fluctuation, may be felt in the iliac fossa beside or behind the uterus (sometimes in front of it). The tumor is movable, independently of the uterus.

Chief Signs.—May be no symptoms, or those of pressure when large; may be disturbed menstrual function; may be abrupt and intense abdominal pain, vomiting, and collapse in the sudden torsion of the pedicle.

Tuberculosis of the Cecum.—*Characteristics.*—Hyperplastic colonic tuberculosis, which has a predilection for the cecum, shows itself as a fairly large, smooth, elastic mass, defined without difficulty by palpation when not visible. By compressing the swelling between the thumb and fingers, it is found to be non-indentable (opposite of fecal tumor). The tumor varies in size, however, is usually elongated in a vertical direction, hard, slightly movable, or bound down by adhesions, and very sensitive to pressure. In a second form there is no definite tumor mass to be felt, but a general induration and thickening in the right iliac fossa. In this type a fecal fistula may form.

Chief Signs.—Occurrence between twenty and forty; slow growth (two to three years); slight pain; absence of cachexia or marked emaciation; digestive disturbances; may be fever; abdominal tenderness; marked peristalsis; occasional tubercle bacilli in the stools; positive tuberculin reaction; frequent leukopenia with relative lymphocytosis; presence of tuberculosis elsewhere.

Ventral Hernia.—*Characteristics.*—Ventral hernia is common at the site of an old scar for an appendicitis which has drained pus from a local abscess. For description, see page 505.

Psoas Abscess.—*Characteristics.*—In lower dorsal or lumbar tuberculous

spondylitis pus may enter the psoas sheath and gravitate downward, either forming a large swelling in the iliac region or pointing below Poupart's ligament. Fluctuation may be elicited, but there is little tenderness.

Chief Signs.—Tenderness, and rigidity or angular deformity of the spine; may be kyphosis; flexion of the hip; fluctuation; pain on movement of the leg; positive tuberculin test; x-ray.

Tuberculous Adenitis (Ileocecal).—*Characteristics.*—Occasionally the glands in the right iliac fossa suffer the main involvement. They may give rise to multiple, small but firm, tender swellings.

Chief Signs.—See page 479.

Sarcoma of the Ilium.—*Characteristics.*—Palpation in the iliac fossa reveals a firm or even bony hard mass, completely fixed to the deeper parts of the pelvis.

Chief Signs.—See page 479.

Less Common Causes.—Mucomembranous colitis; acute intussusception; chronic intussusception; acute iliac adenitis; suppurative periostitis of the ilium; floating kidney; actinomycosis of the cecum; lymphosarcoma; sarcoma of the cecum; abscess originating in the sacro-iliac joint or hip-joint; sarcoma of the ovary; carcinoma of the ovary; large diverticulum of the bladder.

SWELLING IN THE HYPOGASTRIUM

(See also "Abnormalities Noted by Digital and Bimanual Palpation," page 582.)

Pregnancy.—*Characteristics.*—A suprapubic globular fullness appears by the fourth month, enlarging progressively upward one and a half inches per month, surrounded above and laterally by tympany.

Chief Signs.—See page 502.

Retention of Urine (Distention of the Bladder).—*Characteristics.*—An acute globular, tense swelling is visible, reaching from the symphysis pubis to the umbilicus, dull on percussion, surrounded above and laterally by a tympanitic zone, and pressure upon which causes pain and increased desire to urinate.

Chief Signs.—See page 503.

Uterine Fibroids (Fibromyomata of the Uterus).—*Characteristics.*—A hard, irregular, nodular mass is palpable, rising out of the pelvis, when the growths are multiple and large. Pedunculated subserous fibroids may be felt at one time and not at another and are often freely movable.

Chief Signs.—Leukorrhea; menorrhagia and metrorrhagia; dysmenorrhea; pelvic pain, vesical and rectal symptoms from pressure; sterility or abortion; anemia; digestive disturbances; bimanual examination (enlarged uterus with inseparable smooth, hard tumors).

Ovarian Cyst.—*Characteristics.*—There is a large globular or ovoid smooth tumor, regular in outline, rising from the pelvis, dull on percussion and fluctuating. The flanks on either side are tympanitic. Vaginal examination reveals the origin of the cyst in the pelvis, displacing the body of the uterus.

Chief Signs.—See page 513.

Ventral Hernia.—*Characteristics.*—Ventral hernias are common in the site of a suprapubic scar. For description, see page 505.

Cyst of the Urachus.—*Characteristics.*—This may form a rounded tumor lying between the umbilicus and the pubis, soft or firm according to the tension of its contents; it may produce hypogastric pain. It may open into the bladder or at the umbilicus and sometimes may attain a large size.

Less Common Causes.—Intussusception; physometra; hematometra; ruptured ectopic pregnancy (cup-shaped roof and dome-like abdomen); carcinoma of the uterus; tuberculous peritonitis; large diverticulum of the bladder.

ASCITES

Alterations in the appearance of the abdomen due to ascites, or dropsy of the peritoneal cavity, vary with the volume of the contained fluid and the pressure thereby produced. If the effusion be moderate, nothing more definite is perceptible than slight bulging of the flanks with flattening of the summit in the dorsal posture, and fullness of the lower abdomen on standing. The lowest parts are dull or flat on percussion, shifting with change of posture and gravitation of fluid, with ascent of air-containing bowel. In dorsal decubitus the flanks are flat, the summit of the abdomen tympanitic. With the patient on the side the upper flank becomes tympanitic. In the knee-chest position both flanks are tympanitic while the central abdomen is flat. If the effusion is great enough in amount as to form a striking enlargement, the abdomen will be smooth, tense, presenting a uniform globular protuberance which curves downward from the epigastrium, fills the flanks, overhangs the hypogastrium, obliterates the umbilical fossa or makes it actually protrude. The shape of the abdomen when so distended is slightly, if at all, affected by postural changes and the fluid will give a distinct wave of fluctuation recognizable often by the eye as well as hand. A pendulous abdomen full of free fluid bulges particularly toward the middle line, producing a disproportionately elongated protuberance having a broad, sagging base, the shape of which visibly alters when the subject changes from the erect to the recumbent position.

Cirrhosis of the Liver (*Alcoholic or Portal Cirrhosis*).—*Characteristics.*—Ascites gradually develops, the abdomen becoming distended as fluid accumulates until it may reach a large size containing at times up to fifteen or twenty liters. The large abdomen contrasts markedly with the general wasting.

Chief Signs.—Occurrence in middle age; history of alcoholism; liver small or enlarged with surface hob-nailed or smooth; dyspepsia; hematemesis; hepatic facies; slight or absent jaundice; spleen usually palpable; venules along the costal margin; may be slight fever; later toxic symptoms.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics.*—Ascites is nearly always preceded by swelling and edema of the legs. It is part and parcel of a general edema and is usually accompanied by edema of the abdominal wall. It is especially noted in the decompensation of mitral stenosis.

Chief Signs.—May be pallor or cyanosis; dyspnea on exertion or constant; dizziness; precordial distress; pulse usually rapid, feeble, or irregular; cough; oliguria; heart usually enlarged; poor muscle tone (cardiac); may be various murmurs and arrhythmias; may be liver enlargement or pulsation; usually a fall in blood-pressure; x-ray; electrocardiography.

Chronic Parenchymatous Nephritis (*Chronic Bright's Disease*).—*Characteris-*

tics.—There may be ascites as part of a general dropsy (anasarca), due to a combination of cardiac and renal causes, or to secondary involvement of the peritoneum.

Chief Signs.—Headache, nausea and vomiting; increased arterial tension with accentuation of the second aortic sound; diminution in the output of urine; albuminuria, cylindruria, hematuria; albuminuric retinitis (ophthalmoscopy); lowered kidney function (phenolphthalein test); high blood urea (blood chemistry).

Nephrosis.—*Characteristics*.—Ascites may be present with the generalized edema.

Chief Signs.—Presence of a septic focus; blood-pressure not increased; absence of anemia; no retinal changes; absence of nitrogen retention; absence of delayed phenolsulphonaphthalein excretion; urinalysis (marked albumin, casts).

Tuberculous Peritonitis.—*Characteristics*.—Ascites is frequent, but the effusion is rarely large; it is sometimes hemorrhagic and frequently encysted between coils of intestine and hence not freely movable. There is, therefore, often a combination of tympany and fixed dulness. This is the most common cause of ascites in children, in whom the occurrence of ascites without edema of the legs should at once suggest it.

Chief Signs.—Occurrence especially in children; usually insidious onset, sometimes acute; chronicity; weakness; pallor; abdominal pain; loss of weight; fever variable, often slight; looseness of the bowels; shifting dulness in the flanks with greatly distended abdomen; tympanites or doughy abdomen with moderate distention, or palpable tumor masses; may be relative lymphocytosis; guinea-pig inoculation with aspirated fluid.

Acute General Peritonitis.—*Characteristics*.—Ascites is usually present except in some acute, rapidly fatal cases. It is of gradual onset. The flanks are dull on percussion, and the dulness may be movable unless there are many adhesions. Its presence is difficult to elicit because of the abdominal distention, rigidity, and pain. There may be considerable effusion without either movable dulness or fluctuation.

Chief Signs.—Usually history or evidence of some primary infectious lesion (perforated ulcer, appendix, gall-bladder, gangrenous gut, pelvic infection); sudden onset with vomiting and shock; abdominal pain; fever; rapid pulse, at first "wiry," later "thready"; constipation, rarely diarrhea; facies hippocratica; dorsal decubitus with the knees drawn up; shallow, costal respiration; collapse; oliguria; marked leukocytosis.

Chronic Proliferative Peritonitis.—*Characteristics*.—The ascites is variable and may be slight or large in amount, depending partly upon the amount of adhesions. It may be encysted and therefore not movable. There may be dulness all over the abdomen, so that this form of ascites is particularly liable to be mistaken for ovarian cyst or tumor. Occasionally the effusion is chylous.

Chief Signs.—Chronicity; variable and intermittent abdominal pain; dyspepsia; constipation; occasionally diarrhea and vomiting; weakness and progressive wasting; variable fever and rapid pulse; irregular and variable abdominal distention; increased and doughy abdominal resistance with various masses and tumors.

Carcinomatous Peritonitis.—*Characteristics*.—Chronic ascites may be the first and only evidence of growth. It may be large enough in amount so that no nodules

can be felt until after tapping. It is either serous, hemorrhagic, or chylous, and may contain endothelial cells.

Chief Signs.—Occurrence after forty; history or evidence of local malignant disease (stomach, ovary, pancreas, colon, rectum, etc.); progressive emaciation and cachexia; inguinal glands or umbilical nodules; enlargement of the supraclavicular glands.

Obstruction of the Portal Vein (*By Enlarged Glands*).—*Characteristics.*—Ascites occurs, usually as the result of obstruction of the main portal vein by carcinomatous metastasis to the portal lymphatic glands from some abdominal growth.

Chief Signs.—Presence of abdominal tumor; signs and symptoms referable to the organ primarily affected (liver, pancreas, stomach, kidney, colon, suprarenal gland); cachexia.

Carcinoma of the Liver.—*Characteristics.*—Ascites occurs in about 60 per cent of the cases. It is usually moderate in amount and rarely requires tapping. It is probably most often due to coincident affection of the portal lymphatic glands.

Chief Signs.—See page 521.

Ovarian Tumor.—*Characteristics.*—Ascites is common. Rapid growth and ascites always suggest malignancy. Rupture of a large cyst causes sudden ascites or sudden increase of ascites. Torsion of the pedicle is followed also by the appearance of effusion.

Chief Signs.—Presence of a tumor or cyst (smooth and retaining the shape of the ovary); pressure symptoms; menstrual disturbances; bimanual examination, revealing the tumor originating from the pelvis, and elongation of the vagina.

Splenic Anemia (*Banti's Disease*).—*Characteristics.*—Ascites is present in the last stage (commonly designated Banti's disease), due either to the enlarged spleen itself or to cirrhosis of the liver, in which case it is accompanied by slight jaundice.

Chief Signs.—Insidious onset; progressive course; enlargement of the spleen; anemia (decreased red cells and hemoglobin, leukopenia, relative lymphocytosis); pallor; recurring hematemesis; later, may be enlarged liver, ascites, and jaundice (Banti's syndrome).

Syphilis of the Liver.—*Characteristics.*—Ascites in a badly nourished and poorly developed person of ten or twenty years of age, associated with enlargement of the liver and spleen, is almost pathognomonic of syphilis of the liver in a congenital syphilitic. Ascites may also develop in acquired syphilis, due to cirrhosis or gummata. Jaundice is, however, more common than ascites.

Chief Signs.—History of infection; may be jaundice; palpation of the irregular edge of the liver (cirrhosis); presence of a palpable mass and tenderness with liver enlargement (gumma); may be fever (cirrhosis); may be pain; may be enlarged spleen; other evidence of syphilis, congenital or acquired; positive Wassermann.

Portal Thrombosis (*Adhesive Pylephlebitis*).—*Characteristics.*—Ascites develops suddenly.

Chief Signs.—Sudden onset; hematemesis; melena; swelling of the spleen.

Chronic Myeloid Leukemia.—*Characteristics.*—Ascites may be a prominent symptom, due probably to the presence of the enlarged spleen or to a leukemic peritonitis.

Chief Signs.—See page 524.

Perihepatitis (*Capsular Cirrhosis*).—*Characteristics.*—The ascites recurs after repeated tapping.

Chief Signs.—Usually those of a proliferative peritonitis; absence of jaundice; enlargement of the spleen; contracted liver; interstitial nephritis; may be adhesive pericarditis and chronic mediastinitis.

Pick's Syndrome (*Pericarditic Pseudocirrhosis of the Liver*).—*Characteristics.*—The main symptoms in this rare condition are those of a chronic peritonitis with perihepatitis, in a patient who has a previous history of pericarditis. Obstinate recurring ascites is the main feature of the syndrome.

Chief Signs.—History of pericarditis; signs of adherent pericardium; enlarged liver (later contracted).

Polyorrhomenitis (*Polyserositis; Concato's Disease*).—*Characteristics.*—Ascites occurs as a part of a general serous accumulation in the various serous sacs. There may be pericardial effusion, pleural effusion, and mediastinal effusion in addition to the ascites.

Chief Signs.—Occurrence in young subjects; signs and symptoms due to the fluid accumulations.

Less Common Causes.—Acute nephritis; aneurysm of the hepatic artery; aneurysm of the ascending arch of the aorta; hydatid cyst of the liver; sarcoma of the liver; lymphatic leukemia; Hodgkin's disease; pernicious anemia; aplastic anemia; pseudoleukemia infantum; Egyptian splenomegaly; peritoneal hydatids; fibroid phthisis; emphysema; mediastinal tumor; chronic mediastinitis; progressive nuclear degeneration; obstructed thoracic duct; ruptured ectopic pregnancy; cyanotic liver; erythremia; typhoid fever; thrombosis of the inferior vena cava.

TYMPANITES

(*Meteorism; Gaseous Distention of the Abdomen*)

Enormous distention of the abdomen with gas occurs, but is of itself of little diagnostic importance. The gas is usually in the intestine, but may be free in the abdomen (pneumoperitoneum). The tympany of intestinal meteorism encroaches upon, displaces, and may obliterate the areas of hepatic and splenic dulness, though liver dulness may persist in the axillary line; the contour and the peristaltic movements of the gaseous stomach and intestines may sometimes be distinguished. The abdominal walls are universally taut, smooth, and shiny, the umbilicus is on a level with the surface or protrudes, and in extreme cases, the lower part of the bony thorax projects. The apex beat may be displaced upward to the fourth interspace. In pneumoperitoneum, the intraperitoneal gas, being free, tends to seek the highest level and this property may be noted in a distinctive change of the percussion sound when the patient turns from the dorsal to the lateral decubitus.

Acute General Peritonitis.—*Characteristics.*—The abdomen is distended and tympanitic, with rigidity of the abdominal wall and without borborygmus or visible peristalsis. Pneumoperitoneum may occur, but is rare, from perforation in appendicitis, gastric, typhoid, dysenteric, syphilitic, or tuberculous ulcer, or from *Bacillus aerogenes* infection.

Chief Signs.—History of gastro-enteric disease which might cause perforation (appendicitis, ulcer); severe pain at the onset with general tenderness and rigidity of the abdomen; vomiting; fever; hippocratic facies; dry, furred tongue; rising rapidity of the pulse; gradual onset of effusion; collapse; leukocytosis.

Acute Intestinal Obstruction.—*Characteristics.*—Meteorism eventually occurs and may be extreme, with visible peristalsis and borborygmi, but without rigidity. Distention is especially marked in volvulus and occurs early.

Chronic Intestinal Obstruction.—*Characteristics.*—In stricture, whether cicatricial or cancerous, there may be transient attacks, in which from some cause the feces accumulates above the stricture, and the intestine becomes greatly distended; in the swollen abdomen the coils can be seen in active peristalsis. In obstruction from fecal impaction there may be gradual distention with abdominal pain and vomiting.

Chief Signs.—See page 475.

Acute Enterocolitis.—*Characteristics.*—More or less tympanites exists, and there are gurgling noises or borborygmi, due to the rapid passage of fluid and gas from one part to another.

Chief Signs.—See page 463.

Tuberculous Peritonitis.—*Characteristics.*—Tympanites may be present in the very acute cases or in old, long-standing cases when universal adhesion has taken place between the parietal and visceral layers. The only characteristic symptom is enlargement of the abdomen.

Chief Signs.—See page 516.

Chronic Constipation (Fecal Impaction).—*Characteristics.*—Meteorism occurs especially with fecal impaction in the rectum and sigmoid colon.

Chief Signs.—See page 478.

Paralytic Ileus (Postoperative).—*Characteristics.*—The abdomen is extremely tense and tympanitic. On auscultation there is absence of noises.

Chief Signs.—Previous abdominal operation; absence of peristalsis; no passage of gas or feces; cardiac embarrassment; ballooning of the rectum.

Typhoid Fever.—*Characteristics.*—Abdominal tympany and tenderness occur but sometimes not until the third week. Sudden pain with increased tension, rigidity, with fall of temperature and increase of pulse rate indicate perforation.

Chief Signs.—See page 701.

Chronic Intestinal Indigestion (Celiac Disease).—*Characteristics.*—Tympanites is constantly present, although much gas may be passed per rectum. There is a marked tendency for the tympanites to increase during the day and to diminish at night, so that the variation in the circumference of the abdomen is usually two or three inches or more in twenty-four hours (differing thus from tuberculous peritonitis).

Chief Signs.—See page 504.

Transverse Myelitis (Infective; Compression; Syphilitic).—*Characteristics.*—Simple gaseous distention may be a troublesome complication.

Chief Signs.—See page 620.

Neurosis.—*Characteristics.*—Tympanites is a common symptom and may be associated with peristaltic unrest and nervous diarrhea.

Chief Signs.—See page 450.

Lobar Pneumonia.—*Characteristics.*—Meteorism is not infrequent and is sometimes serious.

Chief Signs.—See page 412.

Acute Hemorrhagic Pancreatitis.—*Characteristics.*—The abdomen becomes swollen and tense, but without the boardlike rigidity of perforated ulcer.

Chief Signs.—Acute onset with severe colicky pain in the upper abdomen, which may radiate to the left scapula; profound shock with cold extremities, lividity, sweats, weak pulse, and subnormal temperature; vomiting and retching, not feculent; constipation; leukocytosis usual.

Idiopathic Dilatation of the Colon (*Hirschsprung's Disease*).—*Characteristics.*—Tympany is present with great enlargement of the upper half of the abdomen, spreading of the costal arch, increased distance from the ensiform cartilage to the navel, and prominence of the coils of the colon during an acute attack of pain and diarrhea.

Chief Signs.—See page 504.

Less Common Causes.—Dysentery; acute gastritis (severe form); dengue; tabes mesenterica; diabetes mellitus (fatal coma); fracture of the spine; uremia (fatal coma); biliary colic; renal colic; aneurysm; injury of the spinal cord; mesenteric embolism or thrombosis (great abdominal distention, occurring suddenly with heart disease); cirrhosis of the liver.

ENLARGEMENT OF THE LIVER

(*Hepatomegaly*)

The lower edge of the normal liver may be palpable in thin individuals with lax abdominal walls, on deep inspiration, just under the right costal margin. In health, the edge of the organ is firm and uniform, and the surface feels smooth. On percussion, dulness due to the liver cannot be distinguished to the left of the sternum from that of the heart; on the right its upper limit of dulness begins at the middle of the ensiform cartilage, reaches the upper part of the fifth intercostal space in the midclavicular line, the seventh interspace in the midaxillary line, and the ninth interspace in the line of the lower angle of the scapula. Below, the dulness due to the liver may reach as low as midway between the ensiform cartilage and the umbilicus in the midline, but rarely below the costal margin in the right hypochondrium. If the liver is transposed, the right lobe is small and the left large. In very rare instances the whole organ is lobulated. Occasionally a projection known as Riedel's lobe may protrude from its lower right-hand part, usually associated with disease of the gall-bladder. Many conditions quite unconnected with the liver cause an apparent alteration in its size. General weakness of the tissues may lead to its dropping downwards in the erect posture from laxness of its supports. Also, if the liver be somewhat enlarged from disease, its extra weight may cause it to drop, and hence it appears larger than it really is. Alterations in the chest may lead to depression of the liver; such conditions are, briefly: fibrosis of the lungs with retraction of the intercostal spaces; curvature of the spine; large right-sided pleural effusion; right-sided pneumothorax; diaphragmatic pleurisy; and rarely, large pericardial effusion and subdiaphragmatic abscess. Enlargement of the liver rarely causes any upward extension of the

hepatic dulness, except when some local disease, as a tropical abscess, a hydatid cyst, or a subdiaphragmatic abscess, directly implicates the diaphragm. Three moderately common abdominal tumors may give a false impression of increase in size of the liver, namely: carcinoma of the stomach in its greater curvature; malignant disease or impaction of feces in the hepatic flexure or transverse colon; and puckering up of the great omentum in chronic peritonitis. The hepatic dulness may be partly or almost entirely obliterated by tympanites or hypertrophic emphysema and by a large collection of ascitic fluid. Hepatoptosis, or wandering liver, must not be confused with enlargement; in this condition the organ is abnormally movable, can be replaced in its normal position, and there is diminution or absence of liver dulness in the chest.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics*.—The liver is often greatly enlarged in these cases (passive congestion) and may extend far below the costal margin or even below the umbilicus. It is usually hard and its edge smooth and often shows a distinct systolic pulsation. Pain and tenderness over it are common and the skin over the liver may be hyperesthetic. The distinguishing feature between this condition and a downward thrust of the liver produced by a hypertrophied heart and pulsating aorta is, that when one hand is placed on the front and the other hand on the back over the enlarged congested liver, the two hands can be felt to be separated by the expansile pulsation.

Chief Signs.—See page 515.

Alcoholic Cirrhosis of the Liver (*Portal Cirrhosis; Cirrhosis of Laennec*).—*Characteristics*.—Examination at an early stage of the disease may show an enlarged and painful liver, not altered in shape, with the surface and edge quite smooth. In very many of the cases of alcoholic cirrhosis the organ is enlarged at all stages of the disease, but whether enlarged or contracted the clinical symptoms and course are much the same. Later on as the fibrous tissue contracts there is a tendency for the surface to become finely uneven. This unevenness increases, the liver becomes hard, and more uneven, until the irregularities become like "hob-nails," and can be felt through the abdominal wall. At this stage the edge of the liver is irregular and very firm. As the irregularity increases the diagnosis from cancer becomes more difficult, but no irregularity from cirrhosis ever exceeds the size of a small cherry, nor is it ever umbilicated, nor does it enlarge suddenly. Usually a cirrhotic liver is not very painful.

Chief Signs.—Occurrence in middle age; history of alcoholism; dyspepsia; hematemesis; slight or absent jaundice; ascites; hepatic facies; spleen usually palpable; venules along the costal margin; may be slight fever; later, toxic symptoms.

Carcinoma of the Liver.—*Characteristics*.—As a rule cancer of the liver is associated with progressive enlargement, but in some cases of primary nodular cancer and in cancer with cirrhosis the organ may not be enlarged. Inspection shows the abdomen to be distended, particularly in the upper zone. On palpation the liver is felt a hand's breadth or more below the costal margin, descending with each inspiration. The surface is usually irregular, and may present large masses or small nodular bodies, either rounded or with central depressions. In instances of diffuse infiltration the liver may be greatly enlarged and present a perfectly

smooth surface. The growth is progressive, and the edge of the liver may ultimately extend below the level of the navel. Although generally uniform and producing enlargement of the whole organ, occasionally the tumor in the left lobe forms a solid mass occupying the epigastric region. By percussion the outline can be accurately limited and the progressive growth of the tumor estimated.

Chief Signs.—Occurrence after forty; may be evidence of primary malignancy; may be jaundice (60 per cent); may be ascites (60 per cent); dilated superficial abdominal veins; nodules at the umbilicus and along the linea alba; usually fever (100° F.); absence of enlarged spleen; dyspepsia; anorexia and emaciation.

Syphilis of the Liver.—*Characteristics.*—There is a very important group of cases of syphilis of the liver in which the organ is enlarged or there is a tumor causing pain and distress and on examination an irregular mass is discovered. The tumor may be large, causing a prominent bulging in the epigastrium.

Chief Signs.—May be history of syphilis; pain in the right hypochondrium and epigastrium; may be palpable spleen; positive Wassermann; therapeutic test.

Congenital Syphilis.—*Characteristics.*—Enlargement of the liver, though often present, loses some of its significance, since in infants it may be due to various causes.

Chief Signs.—Evidence of maternal syphilis; wasting without apparent cause; muddy complexion; “snuffles” (three to eight weeks after birth); skin affections (roseola, squamous eruption on the palms and soles, rhagades, alopecia); splenic enlargement; epiphysitis, frontal bosses, craniotabes, dactylitis; positive Wassermann.

Fatty Liver.—*Characteristics.*—The fatty liver is uniformly increased in size and the edge may reach below the level of the navel; in fact, it is among the largest met with at the bedside. It is smooth, perhaps softer than usual, and there is neither pain nor tenderness. Sometimes obesity may render palpation difficult.

Chief Signs.—Mainly those of the causal condition (obesity, wasting diseases, chronic intoxications, diarrheas, pregnancy); absence of jaundice or ascites.

Abscess of the Liver.—*Characteristics.*—Enlargement of the liver is more often present with a single large abscess. The enlargement is most marked in the right lobe, and as the abscess cavity is usually located more toward the upper than the under surface, the increase in volume is upward and to the right, not downward as in cancer and the other affections producing enlargement. Percussion in the midsternal and parasternal lines may show a normal limit. At the nipple line the curve of liver dullness begins to rise and in the midaxillary it may reach the fifth rib, while behind, near the spine, the area of dullness may be almost on a level with the angle of the scapula. The enlargement of the liver may be so great as to cause bulging of the right side, and the edge may project a hand's breadth or more below the costal margin. In such instances the surface is smooth, palpation is painful, and there may be fremitus on deep inspiration. In some instances fluctuation may be detected. If there are multiple pyemic abscesses the liver is uniformly enlarged and tender, though pain may not be a marked feature.

Chief Signs.—Presence of a focus of infection (pyemic abscess), or history of amebic dysentery (tropical disease); fever, sweats, rigors; icteroid tint; pain in the back and right shoulder, and over the liver; cough and pleurisy (right base);

leukocytosis; may be perforation into the lung (with "anchovy sauce" sputum); liver puncture.

Rickets (*Rachitis*).—*Characteristics*.—The liver is generally palpable due to displacement more than to actual enlargement.

Chief Signs.—See page 374.

Splenic Anemia (*Banti's Disease*).—*Characteristics*.—In the terminal stages the liver becomes enlarged from cirrhosis. In the earlier stages of pure splenic anemia the liver is often reduced in size.

Chief Signs.—See page 524.

Chronic Myeloid Leukemia.—*Characteristics*.—The liver is generally palpable.

Chief Signs.—See page 524.

Amyloid Liver (*Waxy or Lardaceous Liver*).—*Characteristics*.—The liver is uniformly enlarged and may attain dimensions only equaled by those in cancer (up to fourteen pounds). It is solid, firm, painless, and smooth, with rounded edge and increased consistence. Sometimes even when greatly enlarged, the edge is sharp and hard.

Chief Signs.—History of chronic suppuration or syphilis; anemia; wasting; diarrhea; albuminuria; may be palpable spleen; absence of jaundice.

Hypertrophic Biliary Cirrhosis (*Hanot's Disease*).—*Characteristics*.—A fullness in the upper abdominal zone may be the first complaint. On inspection the enlargement may be very marked. On palpation the hypertrophy is uniform, the consistence is increased, and the edge distinct and hard. The vertical flatness is much increased and may extend from the sixth rib to the level of the navel. The gall-bladder is not enlarged. The liver usually remains smooth throughout, and even when towards the end of a long case it becomes a little granular, it never proceeds to anything like the irregularity of ordinary cirrhosis.

Chief Signs.—Occurrence in young adults, usually males, without alcoholic history; chronicity; progressive weakness and malaise; slight jaundice; attacks of pain in the region of the liver with fever and increase of jaundice; enlarged spleen; absence of ascites.

Less Common Causes.—Septicemia; pyemic abscess of the liver; hereditary icterus; suppurative cholangitis due to gall-stones; tropical liver; primary carcinoma of the liver; primary sarcoma of the liver; adenoma of the liver; actinomycosis of the liver; hydatid cyst of the liver; acute non-suppurative hepatitis; universal chronic perihepatitis; phosphorus poisoning (fatty liver; may weigh 10–12 pounds); acromegaly; Gaucher's anemia; cavernous angioma; glandular fever; hemochromatosis (bronzed diabetes); non-parasitic cyst of the liver; lymphadenoma of the liver; Hodgkin's disease; malaria; mediastinitis; pneumonia; relapsing fever; trypanosomiasis; Weil's disease.

SPLENOMEGALY

Enlargement of the spleen, if great enough, will cause the appearance of a palpable tumor mass in the left hypochondrium, which may extend below the umbilicus or even into the pelvis, with visible enlargement of the abdomen. It is generally smooth and firm, the right free edge being palpable with a palpable notch or notches. The hand cannot be inserted between the mass and the left costal

margin except when the spleen is dislocated. The lower pole descends with inspiration. The loin is not filled as in renal tumor. There is dulness over the mass continuous with the normal area of splenic dulness, while resonance may be elicited in the left loin. No intestine can be felt or percussed over the front of the spleen. Bimanual palpation is the best way to detect moderate splenic enlargement. Occasionally auscultation gives a loud rub over the mass on deep breathing, and sometimes a continuous humming bruit may be heard. Movable or floating spleens are rare but occur.

Chronic Myeloid Leukemia.—*Characteristics.*—The spleen may be enormous, usually reaching the umbilicus or beyond. The edge and notch are easily felt and the surface is smooth; the organ may be tender. The liver is generally palpable, and may be tender.

Chief Signs.—Insidious onset; age twenty-five to forty; anemia; wasting; leukemic retinitis; edema of the legs; Ménière's disease; terminal hemorrhages with bleeding from the gums, nose, or stomach; vomiting; blood examination (leukocytes 200,000 or more, myeloblasts 1–10 per cent, myelocytes 5–50 per cent, normoblasts).

Rickets (*Rachitis*).—*Characteristics.*—The spleen may be enlarged and readily palpable.

Chief Signs.—See page 374.

Congenital Syphilis (*Hereditary Syphilis*).—*Characteristics.*—The spleen is often enlarged and also the liver, either as an early or late manifestation.

Chief Signs.—See page 522.

Septicopyemia.—*Characteristics.*—The spleen is enlarged and soft.

Chief Signs.—Chills and fever (remittent or intermittent); prostration; anemia; apathy; gastro-enteric symptoms; presence of causative infection; leukocytosis; blood culture.

Typhoid Fever.—*Characteristics.*—Moderate enlargement of the spleen occurs. It is soft and may just be palpable on deep inspiration, although at times it may reach the level of the umbilicus.

Chief Signs.—See page 701.

Splenic Anemia (*Banti's Disease*).—*Characteristics.*—The spleen may be enlarged to the umbilicus or below and is smooth and painless.

Chief Signs.—Chronic course; slowly progressive anemia; recurring hematemesis; later, cirrhosis of the liver, ascites, slight jaundice; blood examination (leukopenia with lymphocytosis, secondary anemia).

Acute Miliary Tuberculosis.—*Characteristics.*—Enlargement of the spleen occurs but is neither so early nor so marked as in typhoid fever.

Chief Signs.—Insidious onset; irregular fever; pulse rapid and feeble; flushed cheeks, dry tongue, sweating; few lung signs; torpor, progressing to coma; leukocytosis; cough, dyspnea, cyanosis in the pulmonary form; x-ray.

Cirrhosis of the Liver (*Hepatic Splenomegaly*).—*Characteristics.*—The spleen may be greatly enlarged or only moderately so. This occurs in alcoholic cirrhosis, syphilitic cirrhosis, and in some cases of hypertrophic cirrhosis. The picture may closely resemble splenic anemia.

Chief Signs.—Recurring hematemesis; ascites; jaundice; anemia; small, large, or irregularly nodular liver.

Splenic Infarction.—*Characteristics.*—The spleen is felt to be somewhat enlarged and tender.

Chief Signs.—Presence of cardiac disease or septic process; sudden onset with pain in the left hypochondrium; fever; occasionally friction sound.

Malignant or Ulcerative Endocarditis (*Infective Endocarditis*).—*Characteristics.*—The spleen is nearly always palpable from the general toxemia. Embolism and infarction occur with a history of acute pain low down on the left side of the chest.

Chief Signs.—Often history of acute rheumatism or previous endocarditis; varying symptomatology of septicemic, cardiac, and embolic phenomena; markedly irregular or continuously high pyrexia; profuse sweats; rigors; progressive weakness; various rashes, often purpuric; variable cardiac murmurs; rapid or irregular pulse; leukocytosis; may be embolism; blood culture.

Pernicious Anemia.—*Characteristics.*—The spleen is often palpable but not markedly enlarged.

Chief Signs.—See page 395.

Tuberculosis of the Spleen.—*Characteristics.*—The spleen is enlarged and is usually firm. There may be a nodular feel and tenderness on pressure.

Chief Signs.—Usually gradual onset; pain in the splenic region; loss of weight; weakness, lassitude; irregular fever; evidence of a focus of tuberculosis in the lungs or lymph glands.

Malaria.—*Characteristics.*—During the paroxysm the spleen is enlarged and the edge can usually be felt below the costal margin. After recurring attacks the spleen becomes chronically enlarged with additional temporary increase in size during each acute febrile paroxysm (“ague cake” spleen).

Chief Signs.—Cycles of cold, hot, and sweating stages occurring every third or fourth day or every day or irregularly; presence of the malarial parasites in the blood; therapeutic test with quinin.

Acute Lymphatic Leukemia.—*Characteristics.*—The spleen is palpable in 75 per cent, but usually there is only slight enlargement. The liver is also usually enlarged.

Chief Signs.—Acute course; age under twenty years; anemia; fever (103°–104° F.); swelling and ulceration of the gums, cheeks, tonsils; bleeding from the gums, nose, stomach, rectum; purpura; enlarged lymphatic glands; vomiting or diarrhea towards the end; rapid weakening; blood changes (leukocytes 20,000–100,000 or more; lymphocytes up to 90 per cent).

Pseudoleukemia Infantum (*Von Jaksch's Anemia*).—*Characteristics.*—The spleen is often enlarged to the umbilicus. The liver is also enlarged.

Chief Signs.—Occurrence in infancy; may be history of syphilis, rickets, diarrhea, or prolonged lactation; anemia; blood changes (leukocytes 20,000–40,000, myelocytes 10–25 per cent, normoblasts, megaloblasts, sometimes increased lymphocytes or leukopenia).

Splenomegalic Cirrhosis.—*Characteristics.*—The spleen is enlarged, often considerably.

Chief Signs.—Occurrence in children and young adults; familial tendency; jaundice; anemia; lack of development; hematemesis; ascites; negative blood picture (except for chlorotic anemia).

Hodgkin's Disease.—*Characteristics.*—The spleen is always enlarged to some extent, but never to an extreme degree. The edge (palpable in 75 per cent) is hard and sharp. The liver is also often enlarged.

Chief Signs.—Insidious onset; glandular enlargement, painless and may be general; fever; pallor, weakness, anemia; blood examination (leukopenia with relative lymphocytosis, or leukocytosis with increased polynuclear cells, eosinophilia).

Abscess of the Spleen.—*Characteristics.*—The spleen is always enlarged, but may not be sufficiently so to be palpated below the costal border. At times it may be normal, and a large fluctuating mass may be felt in the left side of the abdomen.

Chief Signs.—Presence of some primary septic focus; pain and tenderness in the splenic region; intermittent or remittent fever; nausea, vomiting, diarrhea; may be audible friction rub; neutrophilic leukocytosis.

Congenital Family Cholemia (Acholuric Family Jaundice).—*Characteristics.*—The spleen is considerably enlarged, and often the liver also.

Chief Signs.—Hereditary nature; slight jaundice; absence of bile in the urine, presence of bile in the stools; secondary anemia; fragility of the red blood-cells.

Polycythemia Rubra Vera.—*Characteristics.*—The spleen is enlarged, often to the umbilicus, and is painless and hard.

Chief Signs.—Headache and giddiness; cyanosis of the face; slight dyspnea on exertion; increased blood-pressure; enlarged heart; hemorrhages from the mouth, nose, lungs, stomach, bowels, kidneys; blood changes (erythrocytes 7,000,000 to 12,000,000, hemoglobin 130 to 160 per cent, leukocytes 20,000, a few myelocytes).

Gaucher's Disease.—*Characteristics.*—The spleen is greatly enlarged.

Chief Signs.—Chronic course; health good; absence of marked anemia, hemorrhages, jaundice, ascites; large liver in the later stages; pigmentation of the skin; characteristic Gaucher cells in the liver and spleen after death.

Less Common Causes.—Chronic lymphoid leukemia; Still's disease; arthritis deformans in children; Egyptian splenomegaly; lardaceous disease; mixed leukemia; pressure on the portal vein by glands or tumor; relapsing fever; typhus fever; paratyphoid fever; Malta fever; erysipelas; pneumonia; diphtheria; scarlet fever; smallpox; rheumatic fever; influenza; kala-azar (India, Africa, Sicily); gumma of the spleen; carcinoma of the spleen; sarcoma of the spleen; cyst of the spleen (other than hydatid); hydatid cyst of the spleen; hemochromatosis; Addison's disease; epidemic hemoglobinuria; purpura; sarcoma of the kidney; acute poliomyelitis; acute yellow atrophy of the liver; cerebrospinal fever; diarrhea in children; infectious jaundice (Weil's disease); status thymicolymphaticus (lymphatism); mycosis intestinalis (internal anthrax); pneumonic plague; scurvy; thrombosis of the portal or splenic vein; injury (subcapsular bleeding); strangulation by twisting of the pedicle, usually in a dislocated spleen; ponos; histoplasmosis; avian tuberculosis; "hysterical" dysphagia.

ENLARGEMENT OF THE KIDNEY

Kidney enlargements have many common characteristics. They lie in the loin, with the large intestine in front of the swelling, so that an area of resonance

can usually be obtained in front. The area of dullness to percussion is continuous from the lateral aspect of the swelling to the midline posteriorly, *i.e.*, there is no area of resonance between the mass and the spine. The tumor usually retains the shape of the kidney, being rounded at its borders and poles. As it enlarges it projects forward and downward, but, though it may fill up the natural hollow of the loin, very seldom causes any prominence posteriorly. It does not descend so freely upon deep inspiration as a splenic or hepatic tumor. It may be movable downward or inward, or may be fixed in the loin by preceding inflammation. An enlarged kidney can be felt easily by bimanual palpation, and can be pushed into the loin. When large enough to reach the anterior abdominal wall, it comes in contact with the latter at the level of the umbilicus and bulges out the ileocostal spaces. A line of resonance between the upper margin of the tumor and the hepatic dullness can usually be elicited. A varicocele may be developed on the same side as the tumor. Perinephritic abscess causes a palpable mass in the renal region associated with induration and edema of the tissues of the lumbar region, but in this condition the mass is ill-defined, fixed, and fills the ileocostal space, and is therefore not easily confused with enlargement of the kidney itself.

Hydronephrosis.—*Characteristics.*—A tumor is found occupying the renal region. It is oval or rounded, and smooth, and gives a sense of tenseness or elasticity, and occasionally a distinct fluctuation. In the intermittent form the tumor disappears after the passage of a large amount of urine. Hydronephrosis may attain a large size and may be mistaken in children for sarcoma of the kidney or of the retroperitoneal glands, and in women for ovarian tumor.

Chief Signs.—May be obscure abdominal pains or pain in the back; frequency or diminution of urine; in the intermittent form, passage of a large amount of urine with disappearance of the tumor; ureteral catheterization, revealing obstruction or enlarged renal pelvis; x-ray.

Pyonephrosis.—*Characteristics.*—The kidney may be enlarged, sometimes enormously, and the swelling is similar to that of hydronephrosis. Palpation, however, is unreliable in many cases.

Chief Signs.—May be pain in the back and loin or on pressure; pyuria; fever, chills, sweats, leukocytosis (if occlusion of the ureter occurs); anemia and weakness; may be cystitis; ureteral catheterization; pyelography; x-ray.

Malignant Tumor of the Kidney (*Sarcoma; Hypernephroma; Embryoma; Carcinoma*).—*Characteristics.*—In almost all instances, a palpable tumor is present. It is either an irregular nodular enlargement of the kidney, or a general, uniform, solid tumor. When small and on the right side, it may be very movable; in some instances, occupying a position in the iliac fossa, it has been mistaken for ovarian tumor. The large growths fill the flank and gradually extend toward the middle line, occupying the right or left half of the abdomen. Inspection may show two or three hemispherical projections corresponding to distended sections of the organ. On bimanual palpation the tumor is felt to occupy the lumbar region and can usually be lifted slightly from its bed; in some cases it is very movable, even when large; in others it is fixed, firm, and solid. Rapidly growing renal tumors are soft, and on palpation may give a sense of fluctuation.

Chief Signs.—In children: occurrence from three to four years; wasting and anemia; large size and rapid growth; great abdominal enlargement; hematuria often

absent. In adults: hematuria (often intermittent); variable pain (severe only when clots are passed); rapid wasting; may be varicocele; pyelography.

Tuberculosis of the Kidney.—*Characteristics.*—On physical examination the kidney may be palpable in front on deep pressure, but tuberculous pyelonephritis seldom causes a large tumor. Occasionally the pelvis becomes enormously distended, but this is rare in comparison with its frequency in calculous pyelitis.

Chief Signs.—Occurrence usually between twenty and thirty; frequency of micturition; dull ache in the loin; pyuria; hematuria; may be cystitis; may be tuberculosis elsewhere (lungs, testicle, seminal vesicles, prostate); tubercle bacilli in the urine; cystoscopy; ureteral catheterization; x-ray.

Polycystic Kidneys.—*Characteristics.*—There are bilateral tumors in the renal regions, which may increase in size even while under observation. They may cause great enlargement of the upper zone of the abdomen. The colon and stomach are in front of the tumors, on the surface of which in very thin subjects the cysts may be palpable. While both kidneys are, as a rule, involved, one may be much smaller than the other.

Chief Signs.—Appearance of symptoms most commonly at forty to fifty years; hematuria; symptoms and signs of chronic interstitial nephritis; pyelography.

Less Common Causes.—Pyelonephritis (occasionally enlarged enough to be palpable); non-malignant tumor of the kidney; amyloid kidney; large solitary cyst of the kidney; hydatid cyst of the kidney.

RETRACTED ABDOMEN

(Scaphoid Abdomen)

The scaphoid abdomen is sunken or hollowed out like a basin or a boat, the sides of which closely correspond to the concavity of the bony pelvis. The abdominal viscera are palpable and normal tympany is greatly diminished. This condition is met with in severe cachexias (malignant, syphilitic, tuberculous, etc.), chronic diarrheas, and states of inanition incident to prolonged vomiting. In these conditions the cause is apt to be apparent and the symptom therefore of no great aid in diagnosis.

Lead Poisoning (Plumbism; Saturnism).—*Characteristics.*—More often than not, during the colic the abdominal walls are retracted, but slight fullness may exist. Tenderness and rigidity of the abdominal walls are usually absent in colic.

Chief Signs.—See page 465.

Acute General Peritonitis.—*Characteristics.*—At first the abdomen may be retracted, but soon becomes distended.

Chief Signs.—See page 518.

Tuberculous Meningitis (Basilar Meningitis).—*Characteristics.*—The abdomen becomes retracted, boat-shaped, or carinated in the stage of stupor.

Chief Signs.—See page 89.

Diaphragmatic Hernia.—*Characteristics.*—The abdomen may be markedly retracted, one or more of the viscera being displaced into the left thorax.

Chief Signs.—History of severe trauma to the trunk; pain in the upper left quadrant and chest; dyspnea; gastro-intestinal disturbances; signs of pneumothorax or hydrothorax; dextrocardia; x-ray.

Less Common Causes.—Enterocolitis; cerebrospinal meningitis; pyloric obstruction; brain tumor; cholera; cyclic vomiting; stricture of the esophagus.

RETRACTION OF THE ABDOMEN ON INSPIRATION

Paralysis of the Diaphragm (*Phrenic Nerve Paralysis*).—*Characteristics.*—The epigastrium is drawn in during inspiration, but this is often noticeable only on deep inspiration. Breathing is performed by the intercostal and accessory muscles of respiration.

Chief Signs.—History of diphtheria, birth trauma, wounds or tumors in the neck, fractures or tumors of the cervical spine; marked dyspnea upon the least exertion; râles and diminished resonance at the base of the lungs; absence of the diaphragmatic shadow; fluoroscopy.

Laryngeal or Tracheal Stenosis.—*Characteristics.*—Inspiratory sinking of the abdomen occurs on account of the relative increase of the atmospheric pressure over that within the lungs, and overaction of the accessory muscles of respiration.

Chief Signs.—See page 393.

Less Common Causes.—Pleurisy with large effusion; bronchial asthma; massive collapse of the lung.

RIGIDITY OF THE ABDOMEN

(*General or Local*)

Some individuals, either from modesty or timidity, hold their abdominal wall intensely rigid during an examination of the abdomen, particularly while palpation is being performed. This spasmodic condition is obviated by engaging them in conversation for a minute or two, by having them take a few deep breaths, or by making them draw their knees up and keep their mouths open. Muscular rigidity is a relative term. The contraction of the muscles may be firm, continuous, and boardlike, or the muscular fibers may not contract to any detectable extent until the fingers are gently pressed on the abdominal wall. It is exceedingly important to remember that muscular rigidity and resistance are often very slight even though there may be serious intra-abdominal inflammation: (1) When the abdominal wall is very fat and flabby and the muscles thin and weak; (2) when the patient is suffering from severe toxemia. It is noteworthy that the recti are usually more definitely rigid than the lateral abdominal muscles. Limitation of the respiratory movement of the abdominal wall indicates some rigidity of the diaphragm or abdominal muscles, or possibly undue distention.

Acute General Peritonitis.—*Characteristics.*—Rigidity of the abdominal wall is one of the early symptoms, associated with increasing distention, pain diffuse or general according to the extent of infection, and vomiting. There are some cases of diffuse and spreading peritonitis in which rigidity is not observable, as in cases of postoperative and primary pneumococcal infection. In the late stages abdominal rigidity is diminished, owing to the depression of reflex activity by toxemia.

Chief Signs.—See page 518.

Perforated Peptic Ulcer (*Gastric or Duodenal*).—*Characteristics*.—Rigidity of the abdominal wall is a constant feature. The muscles, particularly of the upper abdomen, are flat and boardlike and even firm pressure cannot make them give way. The rigid muscles do not move on respiration and the movement of the diaphragm is also considerably inhibited, so that breathing is shallow and of the costal type.

Chief Signs.—See page 467.

Acute Appendicitis.—*Characteristics*.—Local muscular rigidity over the inflamed area is frequently present, but is by no means a constant symptom in the initial stages. There are several grades of muscular rigidity. The extreme degree is that in which the particular section of the abdominal wall is persistently stiff and will not move on respiration, a lesser degree in which the muscles stiffen almost as soon as the hand touches the skin, and a mild degree in which rigidity occurs only when the fingers are pressed more deeply into the iliac fossa or toward the appendix. With an unperforated appendix situated in the pelvis rigidity is nearly always absent. Rigidity of the psoas muscle should always be tested for by extending the right thigh with the patient on the left side.

Chief Signs.—See page 490.

Acute Salpingitis.—*Characteristics*.—Some rigidity of the lower segment of one or both recti muscles is often present, but not as marked as in appendicitis.

Chief Signs.—See page 477.

Acute Cholecystitis.—*Characteristics*.—Rigidity of the abdominal muscles is present in severe cases, more marked in the upper segment of the right rectus, especially if the inflammation has spread to the neighboring parts around the gall-bladder. In many cases of cholecystitis, however, there is no rigidity.

Chief Signs.—See page 471.

Cholelithiasis (*Biliary Colic*).—*Characteristics*.—During the attack of colic there is a certain amount of rigidity in the right hypochondrium on pressure, due to the severe pain. This rigidity passes off with the pain. When it persists there must be accompanying cholecystitis or local peritonitis.

Chief Signs.—See page 471.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics*.—Abdominal pain with some rigidity may occur in the early stages before the onset of the physical signs in the chest. The rigidity is more marked on light superficial pressure than on deep pressure.

Chief Signs.—See page 412.

Contusion of the Abdominal Wall.—*Characteristics*.—Rigidity may be a marked feature and therefore troublesome in excluding intra-abdominal injury. In mere contusion, collapse will disappear, the abdomen will become less rigid, and the pulse rate will fall.

Rupture of an Abdominal Viscus.—*Characteristics*.—There is persistent local rigidity tending to extend.

Chief Signs.—History of injury; may be severe abdominal pain; vomiting; gradually rising pulse rate; deep local tenderness; shallow abdominal respirations; development of symptoms of hemorrhage or peritonitis.

Typhoid Fever.—*Characteristics*.—Rigidity is present following perforation of an ulcer, usually in the third week.

Chief Signs.—See page 701.

Tabes Dorsalis.—*Characteristics.*—Paroxysmal rigidity may occur during a gastric crisis, accompanied by severe burning pain in the epigastrium, and followed by vomiting.

Chief Signs.—See page 468.

Acute Hemorrhagic Pancreatitis.—*Characteristics.*—There is rigidity of the abdominal wall, especially in the epigastrium, with tenderness over the rigid area. There is a diffuse, extreme abdominal tenderness and later abdominal distention. The resistance may, however, be overcome by steady pressure and in rare instances a deep, tender swelling may be palpated.

Chief Signs.—See page 468.

Less Common Causes.—Subphrenic abscess; acute intestinal obstruction; acute diverticulitis; diaphragmatic pleurisy; cancer of the liver; cancer of the uterus; thrombosis or embolism of the mesenteric vessels; pericarditis (involving the diaphragm); vesical calculus (lower segment of the rectus); ruptured abdominal aneurysm; acute thrombosis of the inferior vena cava; acute suppurative nephritis; lead colic (retraction rather than rigidity); ruptured ectopic pregnancy (tension over the sac); liver abscess (perforating into the abdominal cavity); hepatitis; pyelitis; hemoperitoneum; acute osteomyelitis of the dorsal or lumbar vertebræ.

ENLARGED VEINS OF THE ABDOMINAL WALL

(See also "Enlarged Veins of the Chest-Wall," page 381.)

The veins may be more visible in wasting conditions due to thinning out of the subcutaneous fat. Varicose veins similar to those of the leg rarely occur as an idiosyncrasy or hereditary condition. In neither of these cases, however, is the blood current reversed. When the dilatation is considerable and associated with tortuosity, the condition always has much diagnostic significance, especially if the direction of the blood-flow is reversed. The direction of the current is tested by expressing the blood from a part of the vein where there are no side branches by means of two fingers pressed down on the vein close together and then drawn asunder, while pressure over the vein is maintained by each; when a length of the distended vein has been emptied in this way one of the fingers is raised, and the time taken by the vein in refilling is noted; the procedure is repeated, the other finger being taken off this time. Normally the blood flows from above downward in the veins of the lower two-thirds of the abdominal wall; when the blood-flow is from below upward there is almost certainly obstruction to the inferior vena cava.

Intra-Abdominal Malignancy.—*Characteristics.*—Malignant disease causes obstruction of the inferior vena cava sufficient to produce collateral varicosity decidedly more often than non-malignant masses. The obstruction is produced by the primary growth, by the secondarily involved retroperitoneal glands, or by the invasion of the inferior vena cava by the malignancy through direct extension along the veins, resulting in occlusion of its lumen. If there is marked varicosity of the superficial veins early in a case with moderate ascites the probability is that both are due to malignant disease. There will very likely be symmetrical edema of

the legs, and possibly albuminuria and hematuria. The varicosity is noted in the lower veins of the abdominal wall, with the blood-flow in them reversed so as to be from below upward, and the history is a relatively short one.

Ascites.—*Characteristics.*—When the intra-abdominal pressure becomes great enough to occlude the inferior vena cava, dilatation of the abdominal and lower thoracic veins occurs. This is usually a late symptom of such mechanical obstruction.

For causes of Ascites, see page 515.

Large Abdominal Tumor.—*Characteristics.*—A large ovarian cyst or great enlargement of the spleen or liver, when sufficient to compress the inferior vena cava as in ascites, will give rise to the development of collateral circulation as shown by dilatation and tortuosity of the abdominal veins.

Cirrhosis of the Liver (*Alcoholic or Portal*).—*Characteristics.*—The mammary and epigastric veins are the ones usually enlarged in this condition. The classical caput medusæ caused by varicosity of the veins around the umbilicus is a very rare finding, at least until such time as the general intra-abdominal tension has been greatly increased by the tenseness of the ascites, which occurs late.

Chief Signs.—See page 521.

Thrombosis of the Inferior Vena Cava.—*Characteristics.*—Varicose veins of the lower abdomen are an early sign. The clot is usually an extension upward into the inferior vena cava from one of the tributaries in the leg or pelvis. The current is from below upward.

Chief Signs.—Edema of the legs (one usually edematous and painful before the other, from a thrombophlebitis); may be ascites; may be albuminuria and hematuria (when the renal veins have been reached); absence of edema of the eyelids or face.

Mediastinal Tumor.—*Characteristics.*—A large tumor of the middle or posterior mediastinum may constrict the inferior vena cava, causing edema of the lower extremities, ascites, and engorgement of the surface tributaries of this great venous trunk.

Chief Signs.—See page 433.

Less Common Causes.—Aneurysm of the ascending thoracic aorta; portal thrombosis; aneurysm of the abdominal aorta; dilatation of the stomach; thrombosis of the superior vena cava.

VISIBLE PERISTALSIS

Visible peristalsis is always pathological except in a few cases in which its unimportant nature is immediately obvious, as in diastasis of the recti muscles and ventral hernias through laparotomy scars. In wasting diseases with a very thin abdominal wall the normal peristalsis may be visible.

Acute Intestinal Obstruction (*Intussusception; Volvulus; Bands; Strangulated Hernia*).—*Characteristics.*—Visible waves of peristalsis are seen to run more or less transversely across the abdomen if the small intestine is involved, or vertically in one or both flanks when the colon is involved, and may be noted even before other serious symptoms are present.

Chief Signs.—Abdominal pain; early and constantly repeated vomiting (not so

early if the colon is obstructed), often copious, first of the stomach contents, then of bile, finally of feces; collapse, with low temperature, rapid feeble pulse, cold sweats, dry tongue, and thirst; absolute constipation after the initial emptying; abdomen at first unchanged, later distended and doughy or rigid; variable tenderness, often slight; may be sausage-shaped tumor in intussusception.

Pyloric Stenosis of Infancy (*Hypertrophic Stenosis of the Pylorus*).—*Characteristics*.—If the skin is bared and the patient placed in a good light the characteristic peristaltic waves are seen which are the most diagnostic feature of the disease. They are best seen immediately after taking food or water, and when not appearing spontaneously they may be excited by slight friction or tapping of the epigastrium. There is seen a slowly moving wave from left to right. First a ball-like tumor appears just below the ribs on the left side. It is usually about one and a half to two inches in diameter and slowly moves to the right, disappearing usually just beyond the median line. Sometimes one wave quickly follows another. After marked peristalsis vomiting frequently occurs.

Chief Signs.—Occurrence two to three weeks after birth; forcible vomiting often after feeding, of the stomach contents and mucus, not bile-stained; distention of the upper abdomen with retraction of the lower abdomen; palpable pyloric tumor (two-thirds of the cases); progressive wasting; constipation; oliguria.

Dilatation of the Stomach with Pyloric Stenosis.—*Characteristics*.—Gastric peristalsis occurs as a large swelling in the upper part of the abdomen, coming and going, generally appearing in the region under the left ribs, and progressing slowly downward and to the right where it fades away and disappears; it corresponds more or less with the greater curvature of the stomach.

Chief Signs.—Dyspepsia; large prominent abdomen in which the enlarged stomach may be visible; vomiting at intervals of large quantities of decomposing food; succussion splash; emaciation; constipation; oliguria; may be palpable pyloric tumor; x-ray study.

Chronic Intestinal Obstruction (*Carcinoma of the Bowel; Strangulation; Stricture; Impacted Feces*).—*Characteristics*.—From time to time there are transient attacks resembling mild acute obstruction, during which painful peristalsis above the obstruction may be both seen and felt. This sign is detected far oftener in chronic than in acute obstruction. The distended intestine showing peristaltic contraction is a strong suggestion of chronic obstruction. By noticing the portion of gut distended the seat of stenosis may be located.

Chief Signs.—Chronic intestinal disturbance; abdominal pain; visible peristalsis and distention; may be palpable tumor (due to intermittent spasm of the intestine, or to growth or fecal mass); constipation or diarrhea; anemia, wasting, ill-health; examination of the feces (blood, especially in carcinoma); sigmoidoscopy; x-ray study.

Idiopathic Dilatation of the Colon (*Hirschsprung's Disease*).—*Characteristics*.—Marked peristaltic waves are almost always seen; they are usually in the lower part of the abdomen and on the right as well as on the left side.

Chief Signs.—See page 504.

Less Common Causes.—Visceroptosis; neurosis; profuse diarrhea; chronic peritonitis; cyanosis,

OOZING OR DISCHARGE FROM THE NAVEL

Eczema (*Intertrigo of the Umbilicus*).—*Characteristics*.—In stout individuals chafing may give rise to an eczematous condition of the navel with irritation and oozing.

Umbilical Abscess.—*Characteristics*.—Uncleanliness and infection may cause suppuration at the navel, an abscess resulting. A purulent sinus results from the discharge of such an abscess.

Tuberculous Peritonitis.—*Characteristics*.—This is the commonest cause of acquired umbilical fistula. It may form from extension and caseation of tuberculous masses, and may be fecal if there are also ulceration and adhesions of the intestine.

Chief Signs.—See page 516.

Pneumococcus Peritonitis.—*Characteristics*.—Next to tuberculous peritonitis this is perhaps the commonest cause of acquired umbilical fistula. The fistula discharges feces or pus.

Chief Signs.—Occurrence usually in children; may be primary or secondary; acute onset with general abdominal pain, tenderness, rigidity, and distention; fever (rarely septic, and may be none in the chronic stage); diarrhea; wasting; presence of thick, yellow, odorless pus containing large flakes of fibrin and pneumococci.

Patent Urachus.—*Characteristics*.—The urachus may not be completely closed at birth, and if remaining patent throughout its course there is a fistula at the navel discharging urine; if only the upper portion is patent the fistula discharges mucous material.

Meckel's Diverticulum (*Non-Closure of the Omphalomesenteric Duct*).—*Characteristics*.—A fecal fistula results if the duct remains patent throughout its course. It is first observed after the umbilical stump has separated. The mucous membrane may become everted and form a red tumor. When the duct is wide and short a portion of the intestine may protrude through the opening. If closed at the visceral end but open at the navel the fistula discharges mucus instead of feces.

Less Common Causes.—Sebaceous cyst (after breaking down); biliary fistula (following perforation of the gall-bladder); fecal fistula in the newborn from inclusion of a small umbilical hernia within the ligature which surrounds the cord; congenital obliteration of the bile-ducts (spontaneous hemorrhage from the umbilicus); spontaneous umbilical hemorrhage of the newborn.

ABSENCE OF THE ABDOMINAL SKIN REFLEXES

The abdominal skin reflexes are present in 99 per cent of normal persons. Chilling of the skin, however, will cause them to be temporarily absent.

Multiple Sclerosis (*Insular Sclerosis; Disseminated Sclerosis*).—*Characteristics*.—The reflexes are lost or diminished over the epigastrium and abdomen; this is a characteristic and definite sign.

Chief Signs.—See page 626.

Organic Hemiplegia.—*Characteristics*.—The reflexes are diminished or lost on the hemiplegic side in the initial stage of flaccidity.

For causes of Hemiplegia, see page 314.

Cerebral Tumor.—*Characteristics.*—The epigastric and abdominal reflexes on the side opposite the tumor may be diminished or absent, and may denote a beginning hemiparesis.

Chief Signs.—See page 316.

Less Common Causes.—Acute appendicitis; typhoid fever; tabes dorsalis; epidemic cerebrospinal meningitis; transverse myelitis.

SWELLING IN THE INGUINAL REGION OR GROIN

Enlarged Glands (*Adenopathy*).—*Characteristics.*—Inguinal adenitis from whatever cause gives rise to a rather firm, lobulated swelling which is difficult to confuse with anything else.

For causes and characteristics of Enlarged Glands of the Groin, see page 537.

Acute Abscess of the Groin.—*Characteristics.*—There is a red, painful, tender, fluctuating swelling, which upon incision or aspiration reveals pus.

Chief Signs.—Usually presence of gonorrhea or chancroid; may be fever.

Inguinal Hernia.—*Characteristics.*—There is a soft swelling at the inner portion of Poupart's ligament, which may disappear on lying down, or be returned to the abdomen by manipulation. The swelling may descend into the scrotum (scrotal hernia); straining causes an increase in size and there is an impulse on coughing. Gurgling sounds may be heard on reduction if intestine is included in the sac, and there is tympany on percussion unless only the omentum is present, when there is dulness. The swelling is covered by normal movable skin. The enlarged ring and inguinal canal are evident after reduction of the tumor by digital examination from below. The reduced tumor does not reappear when the patient stands and coughs if the canal is blocked by the finger. The swelling gives no true fluctuation. There is opacity to transmitted light. The orifice of the hernia is above the fold of the groin and Poupart's ligament and internal to the pubic spine (except in the direct form) in contradistinction to femoral hernia. There are two main varieties of inguinal hernia, the oblique or indirect, and the direct. The direct hernia is rare, more globular in shape, placed a little farther in and higher up, more easily reducible but more abrupt in descent, and is usually of sudden onset after some violent straining effort.

Femoral Hernia.—*Characteristics.*—The hernia forms a globular swelling below the fold of the groin and below Poupart's ligament with its neck below and external to the pubic spine. A large femoral hernia may be loculated and usually extends upward and inward over Poupart's ligament, though the bulk of it remains below the fold of the groin. After the hernia is reduced, pressure of the finger over the femoral canal prevents its reappearance when the patient stands and coughs. This hernia is more common in women.

Undescended Testicle (*Cryptorchism*).—*Characteristics.*—There is an elastic, more or less circumscribed swelling in the inguinal canal which gives the testicular sensation on pressure.

Chief Signs.—Absence of the testicle from the scrotum of the corresponding side; often associated hernia above the undescended testicle; may be attacks of pain.

Psoas Abscess.—*Characteristics.*—This gives a soft, fluctuating, painless swelling below Poupart's ligament and usually external to the femoral vessels.

Chief Signs.—Deformity, rigidity, and tenderness of the lumbar or lumbodorsal spine (tuberculosis); fluctuating swelling in the iliac fossa from the loin to the groin; x-ray.

Saphenous Varix.—*Characteristics.*—A fluid swelling is present below Poupart's ligament below and external to the pubic spine. It is reducible, but gives a thrill instead of a gurgle as it is reduced. It reappears from below upward even when the finger blocks the femoral canal.

Chronic Abscess of the Groin.—*Characteristics.*—There is a fluctuating swelling devoid of signs of inflammatory reaction located in the outer portion of the groin, usually above Poupart's ligament.

Chief Signs.—Presence of sacro-iliac or hip-joint disease or tuberculosis of the superficial or deep glands; absence of fluctuation within the iliac fossa.

Encysted Hydrocele of the Cord.—*Characteristics.*—This presents an elastic, circumscribed swelling in the course of the inguinal canal, dull on percussion, and not completely reducible. It gives an impulse on coughing. If traction is made on the cord, thus pulling the cyst down, the swelling is fixed and is seen to present the features of a hydrocele, namely fluctuation and translucency.

Hydrocele of the Canal of Nuck.—*Characteristics.*—This is a smooth cystic swelling in the inguinal region in a woman corresponding to an encysted hydrocele of the cord in a man.

Subperitoneal Lipoma.—*Characteristics.*—A soft, displaceable swelling is present in the inguinal canal which may give an impulse on coughing. It may attain large size and may be the pilot of a hernial sac.

Fibromyoma of the Cord or Round Ligament.—*Characteristics.*—A hard, smooth mass is felt in the inguinal canal, somewhat simulating an ovary.

Iliopsoas Bursitis.—*Characteristics.*—A swelling is present at the base of Scarpa's triangle under or to the outer side of the femoral artery, and possibly transmitting the pulsations of the artery. It is sometimes, but not often, reducible, and is translucent.

Chief Signs.—May be pain down the thigh; may be flexion, abduction, and outward rotation of the thigh.

Obturator Hernia.—*Characteristics.*—There is a vague cordlike swelling deep in the thigh below the fold of the groin and internal to the femoral vessels. Vaginal or rectal examination reveals a tender swelling extending to the obturator foramen. There may be pain in the hip and along the inside of the thigh and knee. This hernia is more common in women.

Aneurysm of the External Iliac Artery.—*Characteristics.*—An expansile pulsation is present beneath the middle of Poupart's ligament, with a bruit, weakening and delay of the corresponding femoral pulse, and marked reduction of the size of the swelling as a result of pressure on the common iliac artery above.

Dislocation of the Hip (Thyroid or Inward).—*Characteristics.*—There is a hard rounded enlargement below or beneath Poupart's ligament (the head of the femur).

Chief Signs.—History of trauma; immobility, eversion, and abduction of the

thigh; flattening of the hip, the trochanter being nearer the median line, the acetabular cavity empty; x-ray.

Sarcoma of the Pelvis.—*Characteristics.*—There is a hard swelling arising from the bones or soft parts of the pelvis which gives no expansile pulsation or bruit.

Chief Signs.—X-ray; vaginal or rectal examination, revealing the origin of the growth within the pelvis and usually fixed to the side of the pelvis.

ENLARGED GLANDS OF THE GROIN

There are two chief groups of glands in this region: The inguinal, lying in the subcutaneous tissue about Poupart's ligament and draining the external genitals, the anus, the umbilicus, the lower parts of the abdomen and back, the buttocks, and the upper third of the thigh; and the femoral, lying below the saphenous opening and draining the lower limb below the upper third of the thigh. The glands may become slightly enlarged and tender from mechanical irritation of a truss or from the bites of parasites (pediculi pubis).

Chancre.—*Characteristics.*—The inguinal glands are moderately enlarged, movable, hard, and knotty, often on both sides. They are not inflammatory. They make their appearance on about the tenth day and persist for weeks after the chancre has disappeared.

Chief Signs.—History of exposure (within a month); single, small indurated ulcer on the penis; dark-field examination, revealing spirochetes; may be positive Wassermann.

Local Septic Infection.—*Characteristics.*—Suppuration in the area drained by the glands of the groin causes them to become enlarged and slightly tender. Suppuration of the glands usually does not occur, but when it does the glands enlarge rapidly, become adherent, and suppurate within three or four weeks of their first enlargement. The enlargement may become chronic.

Chief Signs.—History or presence of infected sore in the area drained by the glands (wound, abrasion, balanitis, herpes, boils, burns, erysipelas); subsidence after removal of the source of infection.

Chancroid (Soft Chancre).—*Characteristics.*—The inguinal glands on one or both sides are enlarged, tender, and painful, and may suppurate, causing unilateral or bilateral buboes (occurring in about one-third of the cases).

Chief Signs.—History of exposure (one to three days previous); multiple soft ulcers on the genitals; presence of bacillus of Ducrey in the scrapings; exclusion of syphilis (mixed infection).

Gonorrhea.—*Characteristics.*—The inguinal glands of one side may enlarge, become painful, and suppurate, causing the ordinary bubo. Buboes due to gonorrhea are not, however, especially common.

Chief Signs.—Presence of a urethral discharge containing gonococci.

Syphilis.—*Characteristics.*—In the secondary stage of acquired syphilis there is often a generalized slight adenitis, but the enlargement is more marked and more common in the epitroclear and postcervical groups. The glands are discrete, not tender, and never suppurate.

Chief Signs.—See page 192.

Epithelioma.—*Characteristics.*—Malignant involvement of the inguinal glands is secondary to a primary growth in the region drained by the glands. The glands are exceedingly hard, grow slowly but progressively, adhere early to the deep fascia and skin, and are painful, but show no signs of inflammation until late when they may suppurate or slough and bleed.

Chief Signs.—Presence of an epitheliomatous lesion of the skin or mucous membrane in the area drained by the glands (penis, anus, sometimes colon).

Tuberculous Adenitis.—*Characteristics.*—Involvement of these glands is rare, but does occur, sometimes as a part of a generalized adenitis and sometimes as a local adenitis. Inguinal adenitis of long standing is suggestive of tuberculous disease of the hip or knee. The glands are first discrete but later coalesce and become adherent to the surrounding tissues and skin. A cold abscess may then form, which may burst and form a sinus discharging a serous curdy material.

Chief Signs.—Occurrence usually in children between two and ten years; slow progress; may be enlargement of the cervical, tracheobronchial, or mesenteric glands; may be tuberculous hip-joint or knee-joint disease; leukopenia with relative lymphocytosis; von Pirquet test; biopsy.

Less Common Causes.—Hodgkin's disease; lymphatic leukemia; lymphosarcoma; melanotic sarcoma; measles; German measles; chickenpox; whooping-cough; bubonic plague; diphtheria; erythema; eczema; glandular fever; intertrigo; prurigo; scarlet fever; Still's disease; symmetrical adenolipomatosis; varicose (filarial) gland; tularemia.

SKIN AFFECTIONS OF THE ABDOMEN

The lineæ striæ or lineæ albicantes are common on the abdomen and are due to previous pregnancy or to any other cause of markedly increased abdominal tension.

Syphilis.—*Characteristics.*—Syphilitic eruptions are rarely confined to the abdomen, but are part of a general rash.

See Skin Affections of the Chest, page 385.

Scabies (Itch).—*Characteristics.*—The lesions are frequently seen about the umbilicus and lower part of the abdomen. The burrows are never numerous in these regions but are confounded by lesions of scratching and open vesicles.

Chief Signs.—History of contagion; marked itching; presence of lesions between the fingers and on the hands, wrists, genitalia, and groins; multiformity of lesions; detection of burrows with a glass.

Psoriasis.—*Characteristics.*—Slightly elevated plaques are present, covered thickly with imbricated, bristly, whitish scales, which, when removed, reveal the uncovered surface of the patch coated over with a thin reddish-white pellicle, which, when scratched, oozes minute drops of blood.

Chief Signs.—Chronicity; absence of itching; presence of lesions on the extensor surfaces and scalp; improvement in summer.

Pityriasis Rosea.—*Characteristics.*—The trunk, and especially laterally, first shows the eruption. It may appear rapidly and attain full development in several days, or it may be slow, coming out in crops and taking one or two weeks to develop. In some cases a herald patch appears anteriorly near the middle of the

waist. The eruption is macular, maculopapular, or distinctly papular. The lesions are oval, scaly, bright rosy red, vary in size from one-half to one inch in length, and have their long axis parallel to the direction of the ribs. In a few days the centers become yellow, while the edges remain rosy. The lesions of the maculopapular and papular variety are smaller than the macular.

Chief Signs.—Onset with sore throat and malaise; sudden spread of the eruption; duration several weeks to a few months.

Less Common Causes.—Erysipelas of the newborn (navel); intertrigo (navel); lichen scrofulosorum (flanks); eczema seborrhoicum (dermatitis seborrhoica); tinea versicolor (extension downward from the chest).

THE BACK AND SPINE

SYMPTOMS	PAGE
Pain in the Back (Backache)	539
Pain in or Radiating from the Spine	540
Lumbar Pain ("Lumbago")	542
Sacral, Sacro-iliac, or Coccygeal Pain	544
Lumbar Tenderness	545
Stiffness or Rigidity of the Back	545
Deep-seated Swelling in the Lumbar Region (Visible or Palpable)	547
Superficial Swelling in the Lumbar Region	547
Kyphosis (Dorsal Convexity of the Spine; "Hump-Back")	548
Lordosis (Lumbar Concavity of the Spine; "Hollow-Back")	548
Scoliosis (Lateral Curvature of the Spine)	551
Localized Tenderness of the Spine	552
Bed-Sore (Decubitus Ulcer)	553
Skin Affections of the Buttocks	554

For Skin Affections of the Back, see "Skin Affections of the Chest," page 385; and "Skin Affections of the Abdomen," page 538.

PAIN IN THE BACK

("Backache")

Pain in the back is a common complaint and its causes numerous. One must consider skin lesions, muscular affections, nerve conditions, joint involvement, bone

disease and trauma, meningeal and cord troubles, systemic diseases, and organic lesions of the viscera anterior to the back, not to mention the host of causes of purely subjective pain. The following is an effort to arrange the causes in a physical way.

PAIN IN OR RADIATING FROM THE SPINE

Neurosis ("*Neurasthenia*").—*Characteristics*.—Spinal symptoms may predominate, with aching pain in the back or back of the neck and spots of local tenderness on the spine.

Chief Signs.—Suggestibility; easy fatigue; insomnia; headache.

Neurosis ("*Hysteria*").—*Characteristics*.—Pain in the back is an almost constant complaint and is associated with sensitiveness of certain spinous processes. The pain is aching in character and may be referred to the whole length of the back or to certain localized portions of it. It is generally relieved by rest upon the back.

Chief Signs.—Occurrence in females; headache; morbid motor, sensory, and psychic phenomena, such as paralysis without wasting of the muscles; characteristic convulsive seizures; anesthesia or hyperesthesia; special sense palsies; suggestibility and emotionalism.

Osteo-Arthritis of the Spine (*Spondylitis Deformans*).—*Characteristics*.—Pain may radiate forward from the spine, along the ribs, downward into the buttock, or along the sciatic nerve. The pain is increased by jars and motion.

Chief Signs.—Gradually increasing stiffness of the spine; neuralgia and muscular atrophy from pressure; kyphosis; x-ray (showing ankylosis, bony outgrowths, sacralization of the fifth lumbar vertebra, atrophy of the intervertebral disks).

Tuberculosis of the Spine (*Pott's Disease*).—*Characteristics*.—Pain is rarely severe and may be absent. It is increased by local pressure, movements, and jarring of the spine. When the nerve roots are irritated the pain is referred to the area supplied by these nerves. The disease is most common in the middle and lower dorsal regions.

Chief Signs.—Rigidity; deformity; local tenderness; may be abscess formation (retropharyngeal, dorsal, lumbar, psoas); x-ray (showing absorption of the bodies of the vertebræ).

Cerebrospinal Meningitis.—*Characteristics*.—Pains in the back and limbs may be severe. Painful stiffness of the neck occurs early. The spine may be very sensitive.

Chief Signs.—See page 446.

Spinal Syphilis (*Chronic Meningomyelitis*).—*Characteristics*.—Pain in the back is often a prominent early symptom and is usually worse at night. Later, severe radiating pains occur along the corresponding nerve trunks, causing girdle pains and neuralgiform pains in the extremities.

Chief Signs.—History of infection (usually within five years); pain in the root areas, and paresthesias; retention of urine; impotence; paraplegia, partial or complete; partial anesthetics, often dissociated; increased deep reflexes; extensor plantar reflex; often signs of cerebral syphilis (cranial nerve palsies, etc.); positive Wassermann; spinal fluid examination (positive Wassermann, increased globulin, lymphocytosis, luetic curve).

Railway Spine (*Compensation or Traumatic Neurosis*).—*Characteristics*.—Pain is present usually in the lower cervical region, dorsolumbar region, fifth lumbar vertebra, or sacrum.

Chief Signs.—History of an accident involving litigation; “neurasthenia”; negative x-ray of the vertebral column; relief after compensation.

Sprain of the Vertebral Column.—*Characteristics*.—Sudden pain develops in the back, usually in the cervical or lumbar regions, following a blow, torsion, or sudden muscular stress, and increased by certain movements which put the injured parts on a stretch, especially rotation. In the lumbar region the pain may radiate downward into the thighs and buttocks, and even into the calves of the legs.

Chief Signs.—History of injury; pain on rotation; rigidity; negative x-ray.

Aneurysm of the Descending Arch of the Thoracic Aorta.—*Characteristics*.—Pain in the back (dorsal region) is commonly the only manifestation. This may be of a dull aching character or a sharp, shooting neuralgic pain. The pain may be localized at one point along the spine or it may radiate around the body and down the left arm and is often intense. It is due to pressure on nerves and bone erosion, usually in the fifth, sixth, and seventh vertebræ.

Chief Signs.—Indefinite and due to pressure within the thorax (on the esophagus, thoracic duct, spinal nerves, vertebræ); later, pulsating tumor in the back, usually alongside the spine in the left interscapular region; x-ray (revealing a pulsating, rounded mass in the course of the thoracic aorta).

Ulcer of the Stomach.—*Characteristics*.—The pain radiates from the epigastrium to the back, causing dorsal pain in many cases localized about the level of the tenth dorsal vertebra. The pain may shoot straight through or spread around the left side.

Chief Signs.—See page 494.

Tumor of the Spinal Cord.—*Characteristics*.—Localized pain and tenderness may be present over the segment involved and shooting root pains occur.

Chief Signs.—At first, shooting pains, hyperesthesia, decreased reflexes; last, paralysis, anesthesia, loss of reflexes, trophic disturbances; lateral curvature; spinal fluid examination (lemon-yellow color, increased globulin, may be pleocytosis); x-ray.

Carcinoma of the Spine.—*Characteristics*.—Local pain in the back occurs, relieved at times by recumbency (long remissions at times under rest). When the nerve roots are affected, excruciating pains radiating along their distribution occur, usually unilateral.

Chief Signs.—Cancer age; presence of a primary growth elsewhere; stiffness of the spine; deformity; local tenderness; later, root pains and cord pressure symptoms; cachexia; x-ray.

Typhoid Spine.—*Characteristics*.—Pain may be complained of in the lumbar and sacral regions usually during convalescence, perhaps after a slight jar or shock. Pain on movement is present, sometimes radiating.

Chief Signs.—History of previous typhoid fever; tenderness and rigidity of the lower spine; x-ray (showing local spondylitis or perispondylitis).

Herpes Zoster.—*Characteristics*.—Burning pain is present between the shoulders and radiating into the chest and arms. It may occur before the eruption appears and last long afterward.

Chief Signs.—Fever; malaise; headache; a series of blisters and vesicles along the course of the nerves (brachial or intercostal).

Tabes Dorsalis.—*Characteristics.*—Severe paroxysmal pain may occur in the early stages, conducted down the legs to the soles of the feet.

Chief Signs.—See page 468.

Less Common Causes.—Anemia; spinal apoplexy (hematomyelia); abdominal aneurysm; carcinoma of the liver; multiple sclerosis; osteomalacia; osteitis deformans; salpingitis; spinal meningeal hemorrhage; syringomyelia; Bechterew's spondylosis; trench fever; tuberculous spinal meningitis; fracture of the spine; vertebral subluxation; intraspinal hemorrhage (extra and subdural); sarcoma of the vertebræ; vertebral myelomata; acute myelitis; hypertrophic pachymeningitis; acute osteomyelitis of the vertebræ; gonorrheal spinal arthritis; infective spinal arthritis; chronic gastritis; acute poliomyelitis; Erb's syphilitic spinal paralysis; carcinoma of the stomach; cerebellar tumor; flatulence; gastric irritation; mediastinal tumor or abscess; volvulus.

LUMBAR PAIN

("Lumbago")

A very frequent and obvious cause for pain in the lumbar region is that of certain acute infectious diseases of which influenza is the most typical example, others being smallpox, meningitis, pneumonia, epidemic poliomyelitis, typhoid, and dengue. In these cases the patient has become acutely ill with fever, malaise, and other symptoms indicating infectious disease; and in all of these, pain in the lumbar region is only an obtrusive symptom. The difficult cases are those of chronic lumbar pain without outstanding symptoms of a serious nature. Pain in the lumbar region from fatigue and muscular exertion is common. Backache is a common complaint in pregnancy near term. Postoperative backache is also common.

Acute Lumbago (*Fibrositis; Myositis*).—*Characteristics.*—Acute severe bilateral lumbar pain is complained of, increased by contracting the back muscles and on regaining the erect posture after stooping.

Chief Signs.—Sudden onset; exposure to cold, cough, or strain; tenderness of the lumbar muscles; slow gait with rigid back; recurrence common.

Chronic Lumbago (*Focal Infection; Postural Defect, etc.*).—*Characteristics.*—There is chronic backache increased by fatigue or after lying in bed in one position.

Chief Signs.—Chronicity with exacerbations; local tenderness; restriction of movement; "neurasthenic" symptoms; discovery of a focal infection or postural defect or occupational strain.

Nephrolithiasis (*Renal Colic*).—*Characteristics.*—There is agonizing pain beginning in the lumbar region on the side affected and radiating down the ureter to the groin, inner side of the thigh, and to the testis or labium on the same side without relief in any position. There is a dull ache in the lumbar region after the spasm. Calculi remaining in the kidney pelvis may be symptomless or accompanied by constant pain in the renal region of varying intensity which may radiate or even be referred to the opposite side.

Chief Signs.—Sweating, nausea and vomiting; rapid pulse; may be chill and fever; often tenderness over the kidney or ureter; hematuria; x-ray (negative for uric acid calculus); cystoscopy; ureteral catheterization.

Renal Calculus (*Without Colic*).—*Characteristics.*—When the stone is in such a position or of such size as to fill the cavity in which it lies, it may cause a dull continuous ache associated with tenderness.

Chief Signs.—Increased frequency of urination; persistent microscopic hematuria; may be pyuria; may be mild fever for long periods; x-ray.

Acute Renal Infection (*Pyelitis; Pyelonephritis; Focal Suppurative Nephritis; Unilateral Septic Infarct*).—*Characteristics.*—Unilateral pain is often present in the loin associated with tenderness, especially in the costovertebral angle (not usual in chronic forms). Pain may be felt rather in front than behind and referred to different points in the abdomen. It may be increased by motion (especially by cough).

Chief Signs.—Acute onset, irregular fever of the “picket fence” type, and chills; sweating; pyuria; frequency of urination; may be swelling (in pyonephrosis).

Perinephritic Abscess.—*Characteristics.*—There is a deep aching and unilateral pain in the loin, intensified by lumbar pressure, sometimes radiating to the hip-joint and into the thigh, knee, or testicle.

Chief Signs.—Possible history of furunculosis or infection; chills; fever; renal tenderness; muscular rigidity; hip-joint often flexed; an ill-defined mass in the loin; edema of the corresponding foot, and lameness; local edema of the skin; high leukocytosis.

Renal Tuberculosis.—*Characteristics.*—Moderately severe lumbar pain associated with tenderness of the kidney occurs in about half the cases. Renal pain may occur in the healthy kidney from hypertrophy; rarely there is renal colic.

Chief Signs.—Vesical symptoms (frequent and painful urination); mild fever; hematuria (microscopic or visible); pyuria; palpably large or tender kidney at times; tubercle bacilli in the urine; animal inoculation; ureteral catheterization; x-ray (moth-eaten or fuzzy kidney with or without calculi).

Movable Kidney (*Floating Kidney, Nephroptosis*).—*Characteristics.*—There may be a dragging pain in the loin. If the ureter becomes kinked or twisted, violent pain occurs (Dietl’s crisis—pain, vomiting, and polyuria).

Chief Signs.—“Neurasthenic” and dyspeptic signs; physical exploration (palpation of the movable kidney).

Hydronephrosis.—*Characteristics.*—There may be unilateral backache with obscure abdominal pains.

Chief Signs.—Frequency or diminution of urine; may be tumor in the loin, constantly present or disappearing from time to time with the discharge of a large amount of urine; pyelography.

Acute Nephritis.—*Characteristics.*—Pain in the back may be present at the onset.

Chief Signs.—Sudden onset with chills, fever, nausea, and vomiting; scanty high-colored urine containing blood, albumin, and tube casts; early and marked edema; hard pulse; increased tension; second aortic sound accentuated; may be uremia.

Tumor of the Kidney (*Sarcoma, Carcinoma, Hypernephroma, etc.*).—*Charac-*

teristics.—Pain is variable and uncertain. When present it is dragging and dull in character, situated in the loins, and radiating down the thighs. There may be passage of clots with pain.

Chief Signs.—See page 527.

Carcinoma of the Stomach.—*Characteristics*.—The pain may be referred to the back.

Chief Signs.—See page 494.

Acute Appendicitis.—*Characteristics*.—Pain is sometimes present in the right loin, particularly in a high retrocecal appendix.

Chief Signs.—See page 490.

Viscerotoposis.—*Characteristics*.—Backache is commonly complained of, together with a dragging sensation in the abdomen.

Chief Signs.—See page 503.

Abdominal Aneurysm.—*Characteristics*.—Pain almost always occurs, usually in the back, and it may be severe.

Chief Signs.—See page 469.

Less Common Causes.—Cauda-equina tumor; vesical calculus; fecal impaction; phosphaturia; chronic prostatitis; hernia; hydatid cyst of the kidney; lumbosacral neuralgia; abdominal tumor; splenomegaly; myelitis; orthostatic albuminuria; diabetes mellitus; presence of a sixth lumbar vertebra; sacralization of the fifth lumbar vertebra; lumbarization of the first sacral segment; spondylolisthesis; fracture of the transverse process (lumbar vertebrae); dislocation of the articular facet (lumbar vertebrae); compression fracture of the body of a lumbar vertebra; impingement of one lumbar spinous process upon another; syphilis of the vertebrae; Charcot spine (arthropathy).

SACRAL, SACRO-ILIAC, OR COCCYGEAL PAIN

Coccygodynia.—*Characteristics*.—Severe pain, which may be spontaneous or induced by sitting, walking, or defecation, is complained of.

Chief Signs.—Practically confined to the female sex; presence of neuropsychic manifestations; local examination (tenderness with absence of evidence of organic disease).

Uterine Disease (*Parametritis; Displacement; Dysmenorrhea; Endocervicitis; Salpingitis; Uterine Tumor; Cervical Cancer; etc.*).—*Characteristics*.—Pain in the lower back is a common symptom and may be deep-seated or superficial.

Chief Signs.—Bimanual palpation and direct vaginal examination.

Sacro-iliac Disease (*Strain, Sprain, or Subluxation*).—*Characteristics*.—Pain and tenderness are present directly over the joint. The pain may be elicited by raising the leg while the knee is kept stiff. It may be referred to the course of the sciatic nerve, and is often worse at night.

Chief Signs.—History of injury, or postural defect; abnormal mobility of the joint (subluxation); tendency to lean the trunk away from the affected side when standing; limitation of lateral bending of the spine to one side or the other when standing with the knees stiff; x-ray (showing subluxation).

Rectal Disease (*Hemorrhoids; Fissure; Cancer; Ulcer, etc.*).—*Characteristics*.—The pain, which is chiefly in the rectum, may radiate into the lower back.

Chief Signs.—Inspection; digital examination per rectum; proctoscopy.

Trauma (*Fracture; Sprain; Bed-Sore*).—*Characteristics.*—The pain is located in the sacral region and is usually limited to the part affected.

Chief Signs.—History of injury; local examination by inspection and palpation; x-ray (revealing fracture or sprain).

Chronic Posterior Urethritis or Prostatitis.—*Characteristics.*—Pain is usually present in the upper sacral region, constant and aching in character, and uninfluenced by urination.

Chief Signs.—Urethral discharge; normal, frequent, painful, urgent, or difficult urination; pain along the urethra; disturbance of sexual function; prostaticorrhea and spermatorrhea; smear after massage of the prostate (pus).

Less Common Causes.—Tuberculosis of the sacro-iliac joint; sacral caries; sacrococcygeal tumor; hip-joint disease; orchitis; pelvic peritonitis; osteomalacia; inflamed coccygeal cyst.

LUMBAR TENDERNESS

Acute Lumbago (*Fibrositis; Myositis*).—*Characteristics.*—There is usually tenderness of the lumbar muscles.

Chief Signs.—See page 542.

Acute Renal Infection (*Pyelitis; Pyelonephritis, etc.*).—*Characteristics.*—There is often tenderness on deep pressure on the affected side, elicited by pressure in the costovertebral angle.

Chief Signs.—See page 543.

Perinephritic Abscess.—*Characteristics.*—Tenderness in the loin is always present in acute perirenal abscesses.

Chief Signs.—See page 543.

Renal Calculus.—*Characteristics.*—A large stone filling the cavity within which it lies may cause tenderness.

Chief Signs.—See page 543.

Renal Tuberculosis.—*Characteristics.*—There is tenderness of the affected kidney in about 50 per cent of the cases.

Chief Signs.—See page 543.

Less Common Causes.—Lumbar abscess; acute appendicitis; colitis; acute nephritis; carcinoma of the kidney.

STIFFNESS OR RIGIDITY OF THE BACK

Acute Lumbago.—*Characteristics.*—The back is held rigid on account of the pain produced by muscular movement.

Chief Signs.—See page 542.

Chronic Osteo-Arthritis (*Vertebral Type; Spondylitis Deformans*).—*Characteristics.*—There is progressive ankylosis of the vertebræ ("poker back"), sometimes amounting to complete immobility.

Chief Signs.—Nerve root symptoms (pain, anesthesia, atrophy); gradual immobility with kyphosis; fixed ribs; immobile thorax; breathing abdominal; x-ray of the spine.

Sprain.—*Characteristics.*—There is rigidity accompanied by pain and tenderness.

Chief Signs.—See page 541.

Cerebrospinal Meningitis.—*Characteristics.*—Painful stiffness of the muscles of the neck is an early and important symptom, and in severe cases rigidity of the muscles of the back is also present, the patient lying in a position of orthotonos, less commonly, opisthotonos.

Chief Signs.—See page 446.

Tuberculosis of the Spine (*Spinal Caries; Pott's Disease*).—*Characteristics.*—Rigidity is present in the early stages due to muscular spasm, while in the later or convalescent stage immobility is due to ankylosis. Movements of the spine are instinctively resisted, the trunk being moved as a whole with a minimum of bending or rotation.

Chief Signs.—See page 540.

Paralysis Agitans.—*Characteristics.*—There is general stiffness with rigidity in all the muscles, leading ultimately to the characteristic attitude in which the body is stooped forward and the spine held stiff.

Chief Signs.—Insidious onset; coarse tremors and "pill-rolling"; weakness; rigidity; bent attitude; propulsion gait; masklike facies.

Encephalitis Lethargica (*Parkinsonian Syndrome*).—*Characteristics.*—The same as paralysis agitans (see above).

Chief Signs.—Occurrence in young individuals following febrile attacks suggestive of encephalitis.

Sacro-iliac Disease (*Strain, Sprain, or Subluxation*).—*Characteristics.*—There is limitation of lateral bending with a tendency to lean the trunk away from the affected side when standing.

Chief Signs.—See page 544.

Tetanus.—*Characteristics.*—Stiffness of the back is present with or without convulsions. During the convulsion, spasm of the powerful back muscles causes the patient to be rigidly bent backward, forward, or sideways, or simply rigidly stiff.

Chief Signs.—History of puncture wound (eight to twelve days previous); stiffness of the neck; may be retraction of the head; locking of the jaws (trismus); risus sardonicus; fever; tonic convulsions with rigidity between paroxysms; duration not over seven to ten days; culture from the wound and inoculation of mice.

Gonorrheal Arthritis (*Spinal*).—*Characteristics.*—Stiffness due to pain is present.

Chief Signs.—History of recent gonorrheal infection; sudden onset of pain in the back increased by bending or rotation; may be fever; chronic course; positive complement-fixation test; demonstration of the gonococcus in a urethral smear; x-ray of the spine.

Aneurysm of the Descending Arch of the Thoracic Aorta.—*Characteristics.*—Marked stiffness of the back in the dorsal region is often present, from erosion of the bone.

Chief Signs.—See page 541.

Less Common Causes.—Perinephritis; osteitis deformans; infective spinal arthritis; multiple myelomata; spinal tumor; epithelioma of the esophagus.

DEEP-SEATED SWELLING IN THE LUMBAR REGION*(Visible or Palpable)*

Hydronephrosis.—*Characteristics.*—The swelling or tumor is in the renal region with bulging in the loin. If large, the tumor may occupy most of the abdomen. It is tense, elastic, smoothly globular and may fluctuate. It is dull to percussion, often painless, and the colon is felt to lie in front of it.

Chief Signs.—May be intermittent filling and emptying; frequency or diminution of urine; ureteral catheterization; x-ray.

Perinephritic Abscess.—*Characteristics.*—There is deep-seated induration between the last rib and the crest of the ilium; bimanual palpation may reveal an ill-defined tumor mass overlying which edema or puffiness of the skin is frequently present.

Chief Signs.—May be intense pain aggravated by pressure in the lumbar region; usually pain referred to the vicinity of the hip; the patient lies with the thighs flexed, and in walking throws the weight on the opposite leg, the spine being held immobile and the body bent forward; may be pus in the urine; may be chills, irregular fever, and sweats.

Tumor of the Kidney.—*Characteristics.*—The flank is bulging and felt to be full of an irregularly nodular, or smooth and regular mass. If large it may extend to the middle of the abdomen. It is dull to percussion and the colon is felt on its anterior surface. If small, the tumor may not be palpable.

Chief Signs.—See page 527.

Polycystic Kidney.—*Characteristics.*—Palpable bilateral tumors are present in the loins filling the renal regions and bulging forward into the abdomen. Fluctuation is not present as in hydronephrosis and pyonephrosis, although the tumors are dull and have the colon lying in front of them.

Chief Signs.—See page 528.

Renal Tuberculosis.—*Characteristics.*—One kidney is often enlarged and tender in the caseous variety; in the miliary form the condition is bilateral but causes no tumor.

Chief Signs.—See page 543.

Pyonephrosis.—*Characteristics.*—Same as in hydronephrosis (see above).

Chief Signs.—See page 527.

Lumbar Abscess (of Pott's Disease).—*Characteristics.*—A fluctuating mass may be felt in the loin or in the region of Petit's triangle associated with evidence of caries of the lumbar spine.

Chief Signs.—See Tuberculosis of the Spine, page 540.

Less Common Causes.—Cancer of the colon; abdominal aneurysm; renal aneurysm; interstitial emphysema; hydatids of the kidney; hydatids of the liver; rupture of the kidney; lymphosarcoma (of the retroperitoneal glands); hernia of Petit's triangle; simple cyst of the kidney.

SUPERFICIAL SWELLING IN THE LUMBAR REGION

Furuncle; Carbuncle.—*Characteristics.*—An acute inflammatory, circumscribed, rounded or acuminate, firm, painful formation is present, usually termi-

nating in suppuration and necrosis. In carbuncle the formation is larger, terminating in a slough with multiple exits in the skin.

Sebaceous Cyst.—*Characteristics.*—A rounded, circumscribed, usually painless swelling is present, which later undergoes retrograde changes (suppuration, calcification); there may be an opening from which pressure causes sebum to exude.

Lipoma.—*Characteristics.*—There are small circumscribed masses or a large lobulated one. They are movable under the skin and within their capsules, the overlying skin being puckered; they may undergo changes (calcification, etc).

Kyphosis of Pott's Disease.—See page 549.

Spina Bifida (*Spinal Rachischisis*).—*Characteristics.*—A congenital central globular swelling is present in the lower lumbar region, partially reducible, translucent, and bulging on coughing or crying. Palpation and x-ray reveal a cleft in the spine; pressure causes the fontanel to bulge and may produce convulsions and other nervous symptoms.

Chronic Parenchymatous Nephritis (*Chronic Bright's Disease*).—*Characteristics.*—The swelling is due to edema. It pits on pressure and is part of a general anasarca. (For causes of Anasarca, see page 659.)

Chief Signs.—Edema, beginning in the face; gradual anasarca without signs of heart failure; oliguria; albuminuria; granular casts; retinitis.

Tuberculosis of the Sacro-iliac Joint.—*Characteristics.*—Abscess formation in the region of the joint is often the first distinctive sign.

Chief Signs.—Pain in the joint, increased by forcibly pressing the wings of the ilium together; psoas spasm; limp; local reaction after tuberculin injection; x-ray.

Fracture-Dislocation of the Spine.—*Characteristics.*—There is swelling due to deformity at the seat of the injury.

Chief Signs.—History of injury to the back; severe local pain; dread of movement; feeling of "broken back"; symptoms of spinal cord compression.

Less Common Causes.—Dermoid cyst; lumbar hernia (through Petit's triangle); sarcoma of the back.

KYPHOSIS

(*Dorsal Convexity of the Spine; "Hump-Back"*)

Angular kyphosis may be accompanied by some lateral deviation which is generally much more abrupt than the curve of scoliosis. A compensatory lordosis is often present, as when in dorsal caries with kyphosis, there is lordosis in the lumbar region. In kyphosis, or posterior hump of the spine, the curve may be angular and limited to a small portion of the back, or diffuse and extending from the cranium to the coccyx. General weakness from any cause may produce a uniform scoliosis in the cervicodorsal region with a compensatory lordosis in the lumbar region and tilting backward of the occiput ("round shoulders"). This is common during adolescence from muscular weakness, lazy habits, and carrying of too heavy weights. Lateral curvature may be associated, and myopia a factor. Old age is often accompanied with kyphosis or stoop. Occupation is often a cause of bent back,

Tuberculosis of the Spine (*Spinal Caries; Pott's Disease*).—*Characteristics*.—There may be a gibbus or sharp hump at the seat of the disease. Kyphosis is not infrequent in the lower cervical region, but not common above, and it develops later than elsewhere. If the dorsal region is kyphotic there is a lordosis in the lumbar region. In the lumbar region deformity is usually not so marked nor so early as in dorsal disease, and sometimes a distinct lateral curvature is present.

Chief Signs.—Rigidity; deformity; local tenderness; may be abscess formation (retropharyngeal, dorsal, lumbar, psoas); x-ray (showing absorption of the bodies of the vertebræ).

Osteo-Arthritis of the Spine (*Spondylitis Deformans*).—*Characteristics*.—Kyphosis may be present with immobility of the spine. The curve is uniform and lordosis is not present.

Chief Signs.—Gradually increasing stiffness of the spine; neuralgia and muscular atrophy from pressure; x-ray (showing ankylosis, bony outgrowths, sacralization of the fifth lumbar vertebræ, atrophy of the intervertebral disks).

Rickets.—*Characteristics*.—The spine is often bent posteriorly in a uniform curve and the processes are prominent; lateral curvature is less common. The deformity may be corrected by lifting the legs when the patient is in the prone position.

Chief Signs.—See page 374.

Hypertrophic Emphysema.—*Characteristics*.—The curve of the spine is increased and the back is rounded so that the scapulæ seem horizontal.

Chief Signs.—See page 416.

Paralysis Agitans.—*Characteristics*.—The head is bent forward, the back bowed, and the arms are held away from the body with the elbows somewhat flexed.

Chief Signs.—See page 546.

Acromegaly.—*Characteristics*.—The spine is kyphotic, the attitude resembling that of a gorilla.

Chief Signs.—See page 616.

Osteitis Deformans (*Paget's Disease*).—*Characteristics*.—Cervicodorsal kyphosis occurs, with sunken chest. The deformity is irreducible and not accompanied by lumbar lordosis.

Chief Signs.—See page 637.

Less Common Causes.—Tumor of the vertebræ; syphilis of the spine; hydatid disease of the vertebræ; osteomalacia; poliomyelitis; syringomyelia; Friedreich's disease; hypertrophic pulmonary osteo-arthropathy; aneurysm of the descending thoracic aorta (eroding through the back); porter's bursitis (vertebra prominens); congenital spastic paraplegia; multiple myelomata; idiocy.

LORDOSIS

(*Lumbar Concavity of the Spine; "Hollow-Back"*)

Anterior curvature of the spine is common only in the lumbar and lower dorsal regions as an exaggeration of the natural hollow of the back. If primary, it is accompanied by compensatory kyphosis in the cervicodorsal region, and is often itself compensatory to cervicodorsal kyphosis. The abdomen is often very promi-

nent. Lordosis is often due to weakness or paralysis of the muscles of the back. Any condition within the abdomen which throws an extra strain upon the lumbar spine, such as large abdominal tumors, pregnancy, and ascites, may cause lordosis, in which case the cause is self-evident. Lordosis is common in contortionists.

Tuberculosis of the Spine (*Pott's Disease*).—*Characteristics*.—Lordosis is often compensatory in this disease to dorsal kyphosis, but it may be primary in the early stage of lumbar caries in children.

Chief Signs.—See page 549.

Tuberculosis of the Hip-Joint.—*Characteristics*.—Lordosis is marked if the child lies on its back with the knee of the affected side pressed down to the table. This bend will disappear when the thigh is flexed. Lordosis combined with lumbar scoliosis is present on standing.

Chief Signs.—Occurrence in children; onset with slight lameness and stiffness of the hip; pain in the hip or along the inner side of the knee, increased by moving the joint or jarring the knee or foot; limitation of movement of the hip and slight flexion; muscular atrophy; abduction and eversion; muscular rigidity; x-ray.

Congenital Dislocation of the Hip.—*Characteristics*.—Lordosis is present with compensatory obliquity of the pelvis, the erect position being maintained only by throwing the shoulders backward to an unusual degree; there is an associated scoliosis in unilateral cases.

Chief Signs.—Recognition when the infant begins to walk; muscular atrophy; flexion and adduction of the thigh with shortening; palpation of the dislocated head of the femur; waddling gait when bilateral, limping when unilateral; x-ray.

Chondrodystrophy (*Achondroplasia*).—*Characteristics*.—Marked lordosis is present with prominent hips.

Chief Signs.—Large head, short arms and legs, long body, delayed dentition and walking; trident hand; normal sexual powers; normal mental development; late bowing of the legs; depressed base of the nose with a prognathous jaw.

Primary Muscular Dystrophy (*Muscular Pseudohypertrophy*).—*Characteristics*.—A marked degree of lumbar lordosis is present in the standing position due to muscular weakness.

Chief Signs.—Occurrence in childhood; general weakness of the lower extremities with increase in the size of the muscles; unsteady gait with falling; difficulty in rising from the floor; later, the arms and shoulders affected; knee-jerks at first present, later absent; no reaction of degeneration.

Postural Albuminuria (*Orthostatic Albuminuria*).—*Characteristics*.—Lordosis is present and evidently the cause of the albuminuria.

Chief Signs.—Occurrence in male youths; neurotic heredity; vasomotor instability; albuminuria only after exertion, eating, or assumption of the upright posture; low pulse-pressure.

Less Common Causes.—Spondylolisthesis; juvenile form of muscular atrophy, Erb's type (lordosis marked); cretinism; double coxa vara; myxedema; perinephritis; osteitis deformans; anterior poliomyelitis; progressive muscular atrophy; syringomyelia; spastic paraplegia; progressive torsion spasm.

SCOLIOSIS*(Lateral Curvature of the Spine)*

The vertebral column not only deviates laterally but is twisted in a spiral direction, the spines rotated towards the concavity. As a rule there are one or two compensatory curves with their convexities in the opposite direction to the original curve. There may be an associated kyphosis. When the curves are marked there is usually considerable deformity of the chest (see page 375). Faulty postures and occupational strains are frequent causes of scoliosis. Probably the most common form is the scoliosis of adolescence, due to relaxed muscles and ligaments which do not develop as rapidly as the spine. Any condition which shortens one leg will cause scoliosis, the convexity of the lumbar curve being towards the short limb.

Tuberculosis of the Hip-Joint.—*Characteristics.*—There is scoliosis due to shortening of the lower limb, the lumbar spine being convex toward the diseased side. The pelvis is lowered on the sound side due to the bearing of more weight on the sound leg.

Chief Signs.—See page 550.

Rickets.—*Characteristics.*—Occasionally lateral curvature is present, kyphosis being more common. The convexity is more often to the left side than to the right, the opposite to the common form of lateral curvature seen in young girls. Marked lateral curvature in children under three years is usually rachitic.

Chief Signs.—See page 374.

Infantile Paralysis (*Poliomyelitis*).—*Characteristics.*—Scoliosis results if there is paralysis of the shoulder and thoracic muscles. Various chest deformities occur.

Chief Signs.—See page 628.

Congenital Dislocation of the Hip.—*Characteristics.*—Scoliosis and lordosis are usually combined when the dislocation is unilateral. The lumbar spine is curved with its convexity towards the dislocated hip.

Chief Signs.—See page 550.

Torticollis (*Wry-Neck*).—*Characteristics.*—Scoliosis is slight and limited to the cervical and dorsal regions.

Chief Signs.—For causes of Torticollis, see page 290.

Sacro-iliac Disease (*Strain; Sprain; Subluxation; Tuberculosis*).—*Characteristics.*—There is a tendency to lean the trunk away from the affected side when standing, which may lead to a scoliosis.

Chief Signs.—See pages 544, 548.

Tuberculosis of the Spine (*Pott's Disease*).—*Characteristics.*—Lateral curvatures occur when the disease affects one side more than the other. Posterior angular deformity is the typical one, however.

Chief Signs.—See page 549.

Pulmonary Fibrosis (*Contracted Lung; Cirrhosis of the Lung; Fibroid Phthisis; Interstitial Pneumonia; Pleural Adhesions; Old Empyema*).—*Characteristics.*—More or less spinal curvature is present, the dorsal scoliosis being concave toward and twisted in the direction of the affected side.

Chief Signs.—See page 374.

Primary Muscular Dystrophy (*Muscular Pseudohypertrophy*).—*Characteristics*.—Scoliosis may occur, lordosis being more common.

Chief Signs.—See page 550.

Multiple Neuritis.—*Characteristics*.—Scoliosis is frequent, especially in the postdiphtheritic form.

Chief Signs.—History of diphtheria, recent; paralysis of the palate with regurgitation through the nose; may be paralysis of the diaphragm; paralysis of the trunk and limb muscles with atrophy; diminished knee-jerks and the reaction of degeneration; culture of the throat (*Klebs-Löffler bacilli*).

Friedreich's Disease.—*Characteristics*.—Kyphoscoliosis develops with the advent of muscular weakness.

Chief Signs.—See page 21.

Syringomyelia.—*Characteristics*.—Deviation of the spine is very common, occurring in over 50 per cent of the cases. It is usually a scoliosis, although antero-posterior curves occur. The whole column may be involved or only a part; most often the dorsal region is affected.

Chief Signs.—See page 317.

Less Common Causes.—Cervical rib; coxa vara, unilateral; "hysteria"; osteomalacia; perinephritic abscess; hypertrophic pulmonary osteo-arthritis.

LOCALIZED TENDERNESS OF THE SPINE

Neurosis ("Hysteria").—*Characteristics*.—A frequent manifestation of "hysteria" is the condition known as "hysterical spine." On percussion of the spine tenderness may be general or localized. It may be more pronounced on pressure over the muscles on one or the other side of the vertebral spines. It is also characteristic that the tenderness is as acute on light as on deep pressure.

Chief Signs.—See page 540.

Neurosis ("Neurasthenia").—*Characteristics*.—There may be spots of local tenderness on the spine, often associated with backache or neuralgic pains in the intercostal regions and aching pains in the legs. Rachialgia, while often spontaneous, may be noticed only on pressure or movement.

Chief Signs.—See page 540.

Cerebrospinal Meningitis (*Cerebrospinal Fever*).—*Characteristics*.—There may be great sensitiveness along the spine associated with painful stiffness of the muscles of the neck and back.

Chief Signs.—See page 446.

Ulcer of the Stomach.—*Characteristics*.—Sometimes in ulcer on the posterior wall near the lesser curvature, there is tenderness to the left of the spine on a level with the tenth dorsal vertebra, accompanied by referred pain at the same point.

Chief Signs.—See page 494.

Chronic Osteo-Arthritis (*Arthritis Deformans; Vertebral Form; Spondylitis Deformans*).—*Characteristics*.—There are pain and tenderness with kyphosis and perhaps pressure on the nerve roots, causing nerve-root pains. Tenderness is present, as a rule, only in the acute stages.

Chief Signs.—See page 545.

Carcinoma of the Spine.—*Characteristics.*—Local pain and tenderness on pressure are elicited and are usually severe.

Chief Signs.—See page 541.

Less Common Causes.—Chronic gastritis (fourth to seventh dorsal) ; duodenal ulcer (right of the twelfth dorsal) ; mediastinal tumor ; lumbar abscess ; mediastinal abscess ; perinephritic abscess ; retropharyngeal abscess ; subphrenic abscess ; aneurysm of the abdominal aorta ; aneurysm of the descending thoracic aorta ; carcinoma of the pleura ; tuberculosis of the spine ; enlarged bronchial glands (fourth and fifth dorsal) ; hydatids of the spine ; hepatic colic (sixth to ninth dorsal) ; chronic myelitis ; pleurisy ; traumatic neurosis ; rickets ; hematomyelia ; traumatic spondylitis ; typhoid spine ; acute osteomyelitis of the vertebræ ; osteitis deformans ; cholecystitis (eighth and ninth dorsal).

BED-SORE

(*Decubitus Ulcer*)

Bed-sores are usually the result of prolonged pressure on tissues where the resistance is lowered by long illness. They are most apt to occur over bony prominences, usually the sacrum, but they may also occur over the trochanters, heels, scapulæ, elbows, and occiput. Occasionally their onset is acute.

Acute Myelitis (*Diffuse or Transverse*).—*Characteristics.*—Acute bed-sores are apt to form over the sacrum especially, and on the heels ; there may be deep sloughing.

Chief Signs.—See page 624.

Cerebral Hemorrhage.—*Characteristics.*—The rapid formation of bed-sores, particularly that known as malignant decubitus of Charcot, is a fatal indication.

Chief Signs.—See page 619.

Cerebrospinal Fever.—*Characteristics.*—Bed-sores are apt to form.

Chief Signs.—See page 446.

General Paralysis.—*Characteristics.*—Bed-sores may develop in the last stages when the patient becomes bedridden.

Chief Signs.—See page 100.

Typhoid Fever.—*Characteristics.*—Bed-sores are not uncommon in protracted cases, with great emaciation.

Chief Signs.—See page 701.

Syringomyelia.—*Characteristics.*—Deep ulcerations may occur anywhere in the anesthetic area and especially at pressure points.

Chief Signs.—See page 317.

Tumor of the Spinal Cord.—*Characteristics.*—Decubitus ulcers and edema may be very distressing symptoms, especially in intramedullary growths, in which transverse myelitis may be simulated.

Chief Signs.—See page 541.

Fracture-Dislocation of the Spine.—*Characteristics.*—Extensive bed-sores may result from compression of the cord.

Chief Signs.—See page 548.

Less Common Causes.—Brain tumor ; hematomyelia ; multiple neuritis ; delirium tremens.

SKIN AFFECTIONS OF THE BUTTOCKS

Various forms of skin irritation from intertrigo to dermatitis or eczema may sometimes be observed on the buttocks in infancy, due to pyogenic infection in the majority of cases. In divers pruriginous conditions the buttocks may become the seat of a chronic irritation with infiltration, to which the name lichenization is given. At the present time when the buttock is the frequent site of mercurial and other injections, indurated nodules are rather often met with. Drug rash, particularly of iodids, bromids, etc., appears frequently on the buttocks.

Furuncle (Boil).—*Characteristics.*—Boils are common in this situation. When subject to pressure, especially by horseback riding, the irritation may disseminate the furuncles along the inner thigh and occasionally the center of the lesions may undergo peripheral necrosis and a typical ecthyma results.

Chief Signs.—Presence of furuncles elsewhere; local pain; induration; inflammation; pustulation.

Syphilis.—*Characteristics.*—Moist lesions or condylomata are common between the buttocks and about the anus. They are sharply raised from the skin, about one cm. in diameter, and have a flat, smooth, moist top of a grayish color. Giant condyloma may occur in children suffering from congenital syphilis. Radiating fissures from the anus are characteristic of congenital syphilis.

Chief Signs.—See page 192.

Scabies (Itch).—*Characteristics.*—The lesions are common and marked in this locality. There are papules, pustules, and vesicles interspersed with scratch marks. The burrows are scarcely recognizable.

Chief Signs.—History of contagion; intense itching; presence of similar lesions and burrows on the penis, groin, lower abdomen, hands, wrists, axillæ, and between the fingers.

Less Common Causes.—Eczema; Mongolian spot.

THE MALE GENITALIA

SYMPTOMS	PAGE
Pain in the Penis	555
Ulcers of the Penis	558
Urethral Discharge	558
Fecal Urethral Discharge	559
Priapism	560
Pain in the Testicle	561
Tenderness of the Testicle	562
Loss of Testicular Sensation	562
Swelling of the Testicle (Testis and Epididymis)	563

Atrophy of the Testicle	564
Swelling of the Scrotum	564
Scrotal Sores	566
Anomalies of the External Genitalia	567
Skin Affections of the Male Genitalia	568

See also "Painful or Difficult Urination," page 822; "Blood in the Urine," page 823; "Eneuresis," page 827; "Impotence," page 727; and "Sterility in the Male," page 802.

PAIN IN THE PENIS

Penile pain is often associated with the act of micturition, but may be present between acts of urination, or may be entirely unrelated to the passage of urine.

Acute Urethritis (*Usually Gonorrheal*).—*Characteristics*.—A sense of burning or scalding is present in the terminal urethra in the early stages. Pain during micturition is marked. Painful erections, chordee, may occur.

Chief Signs.—Tip of the meatus swollen, red, and everted; urethral discharge of thick creamy pus, sometimes with blood; smear (pus and usually gonococci).

Urethral Stricture.—*Characteristics*.—Pain during micturition occasionally occurs, usually due to prostatitis, cystitis, or retention. The pain is felt at the neck of the bladder, in the perineum, at the point of the stricture, or near the glans penis. While actual pain is not common without inflammation, the patient may complain of a scalding, burning sensation during urination.

Chief Signs.—History of gonorrhea (one to fifteen years previous); gradually increasing difficulty of urination with a feeble stream and dribbling; "gleet" (shreds and pus in the urine); obstruction to the passage of a bougie; endoscopy.

Trauma of the Urethra.—*Characteristics*.—Pain is present on urination.

Chief Signs.—History of injury; evidence of injury; hematuria; extravasation of urine into the perineum or scrotum if ruptured.

Urethral Chancre.—*Characteristics*.—Slight pain is present on urination, usually in the glans.

Chief Signs.—Erosion and thickening of the lip of the urethra; palpable lump in the urethra; slight discharge; endoscopy (livid or gray, bleeding ulcer); dark-field examination (spirochetes).

Urethral Calculus.—*Characteristics*.—The passage of a calculus through the urethra causes a sharp, cutting pain along the urethra. If arrested in its course (membranous portion or distal end), a sudden sharp pain is felt with stoppage of urine.

Chief Signs.—Passage of a stone; gleet if impacted, with dysuria; palpation of the stone through the urethra; obstruction to the sound; hemorrhage; retention of urine; x-ray.

Acute Cystitis.—*Characteristics.*—Penile pain is present throughout urination with tingling pain after urination.

Chief Signs.—Acute onset; frequent micturition; pyuria; may be mild hematuria at the end of urination.

Vesical Calculus.—*Characteristics.*—Pain is usually intense, especially in the glans penis, along the pendulous urethra, and in the perineum, and is increased by jolting. In a “fit of the stone” the pains are intensified with long-drawn spasm. These paroxysms become more intense as cystitis develops. If the stone passes into the urethra, a sharp pain is felt.

Chief Signs.—Frequent micturition, greater during the day, with urgency; hemorrhage; sudden stoppage; vesical sound; cystoscopy; x-ray.

Tuberculosis of the Bladder (*Primary or Secondary*).—*Characteristics.*—There is at first pain in the penis and perineum at the close of urination; later the pain occurs before urination due to mixed infection.

Chief Signs.—Increased frequency of urination; hematuria at the end of urination, never profuse but persistent, and unaffected by exercise; pyuria; discovery of tuberculosis in the kidney, testes, prostate, or seminal vesicles if secondary; the terminal ureter may be felt thickened per rectum.

Carcinoma of the Bladder.—*Characteristics.*—Sooner or later, pain and difficulty of urination, and symptoms of cystitis develop, lancinating and very severe and referred to the posterior urethra and penis. The pain in the penis usually follows micturition, but if a pedunculated tumor is present it may block the internal urethral orifice and give rise to sharp penile pain during micturition.

Chief Signs.—Spontaneous, painless, sometimes profuse hematuria, uninfluenced by rest or drugs and often at the termination of urination; may be blood-clots, pus, mucus, and tumor fragments in the urine; cystoscopy.

Vesical Ulcer.—*Characteristics.*—There may be pain referred to the penis following micturition. Hunner’s ulcer causes great pain.

Chief Signs.—May be history of stone, operation, or gonorrhea; passage of blood and clots; cystoscopy.

Vesical Papilloma.—*Characteristics.*—Penile pain and dysuria may be present.

Chief Signs.—Hematuria; sudden stoppage of urine; cystitis; cystoscopy (single pedunculated growth with delicate fimbriæ); biopsy.

Retention of Urine (*Distention of the Bladder*).—*Characteristics.*—There is pain in the penis, perineum, abdomen, and thighs.

Chief Signs.—Inability to urinate voluntarily; enlarged bladder above the symphysis; catheterization (with disappearance of the tumor and the pain); history of obstruction (stricture, prostatic enlargement, etc.).

Prostatitis (*Acute and Chronic*).—*Characteristics.*—Pain in the sacrum and perineum may radiate into the urethra before, during, and immediately following micturition. The condition is usually accompanied by urethritis.

Chief Signs.—Urethral discharge; pain, principally on sitting; heat and fullness in the perineum; frequency of urination with pain especially at the close of the act; tenesmus; painful defecation; may be fever; rectal exploration in chronic cases; urethral smear; smear after massage of the prostate (pus); shreds in the urine.

Prostatic Hypertrophy (*Prostatism*).—*Characteristics*.—There may be soreness or smarting in the urethra and shooting pains in the glans; tenesmus appears with cystitis and pain on urination.

Chief Signs.—Middle age; increased frequency of urination, especially at night and particularly toward morning; force of stream lacking; hesitation in starting, and dribbling at the end of the act; residual urine; hematuria; secondary cystitis; pyonephrosis or septicemia; rectal palpation; cystoscopy (revealing obstruction).

Prostatic Abscess.—*Characteristics*.—Severe pain in the pelvis may radiate into the penis, with penile pain during and at the end of micturition.

Chief Signs.—Antecedent urethral discharge; fever; painful micturition; swollen dusky perineum; urinary retention; softening and fluctuation on palpation through the rectum.

Carcinoma of the Prostate.—*Characteristics*.—Penile pain is occasionally felt on urination though usually of slight severity.

Chief Signs.—Middle life; frequency of urination; hematuria; late sciatic and pelvic pain; bony and glandular metastasis; rectal palpation (stony nodules).

Tuberculosis of the Prostate.—*Characteristics*.—No pain may be present or there may be pain on urination.

Chief Signs.—Gleet; hematuria; involvement of the testis or bladder; tubercle bacilli in the urine.

Urinary Hyperacidity.—*Characteristics*.—Smarting is present on micturition.

Chief Signs.—Urinalysis (hyperacidity).

Epithelioma of the Penis.—*Characteristics*.—Lancinating pain is a prominent symptom only late in the disease.

Chief Signs.—See page 558.

Balanoposthitis.—*Characteristics*.—Burning soreness with itching is present at the end of the penis on urination, usually scalding in character.

Chief Signs.—See page 558.

Herpes Progenitalis.—*Characteristics*.—A sensation of heat and tingling occurs, with pain later if ulceration follows.

Chief Signs.—See page 558.

Nephrolithiasis (*Renal Colic*).—*Characteristics*.—Pain may occasionally radiate downward into the penis in renal or ureteral colic.

Chief Signs.—Renal colic attacks; pain in the back; hematuria; pyelitis; pyuria; ureteral catheterization; x-ray.

Acute Appendicitis.—*Characteristics*.—Pain in the penis is occasionally a prominent early symptom when the appendix occupies a very low position. The pain is not associated with micturition nor with increased frequency of micturition.

Chief Signs.—See page 490.

Less Common Causes.—Cavernitis and penitis; cellulitis of the penis; erysipelas of the penis; injury to the penis (wounds, fracture, hematoma, strangulation, etc.); rectal cancer; anal fissure; inflamed hemorrhoids; proctitis; foreign body in the urethra; cowperitis; carcinoma of Cowper's glands; sacro-iliac disease; sarcoma of the penis.

ULCERS OF THE PENIS

Chancre.—*Characteristics.*—This begins as a small red papule upon the glans or foreskin which gradually enlarges and breaks in the center, leaving a small ulcer, with induration of the surrounding tissue. It is usually solitary and heals in three or four weeks.

Chief Signs.—History of inoculation; enlarged inguinal glands; dark-field examination (spirochetes); Wassermann (may not be positive).

Chancroid.—*Characteristics.*—This begins as a minute yellow spot surrounded by a halo of intense redness, which shades off into a pink color. Later the yellow spot becomes a pustule and finally a deep ulcer with clear-cut edges which are undermined. Its base is irregular, grayish-yellow, and covered by a pultaceous false membrane. The secretion is abundant and purulent, and the ulcer bleeds readily. There are usually several lesions.

Chief Signs.—History of recent exposure (three to ten days); painful bubo (unilateral or bilateral), which may suppurate; smear (Ducrey's bacillus); culture on blood agar; auto-inoculation; elimination of syphilis (may have mixed infection).

Herpes Progenitalis.—*Characteristics.*—Clusters of vesicles upon reddened patches appear on the mucous covering of the glans or on either layer of the prepuce or neighboring skin, which finally rupture, forming erosions irregular in shape, superficial, and rarely complicated by suppurating bubo. There is a slight sensation of heat and tingling.

Chief Signs.—Negative smear; pus non-inoculable; tendency to recur.

Chronic Balanoposthitis.—*Characteristics.*—The glans and mucous membrane of the prepuce become red, then mottled and moist; next the epithelium comes off in patches, leaving irregular excoriations which soon ulcerate and discharge a purulent fluid.

Chief Signs.—Long or tight prepuce; enlarged or tender, non-suppurative inguinal glands; negative smear and Wassermann.

Epithelioma of the Penis.—*Characteristics.*—Usually a lobulated cauliflower growth on the glans or inner surface of the prepuce begins to ulcerate in places. Then the base gradually takes on the hard induration of epitheliomatous ulcers with everted edges. More rarely epithelioma of the penis begins as a raw spot or indolent ulcer. But in either case the ulcer advances, becoming deep, irregular, unhealthy, with hard, livid, everted edges, and there is a thin sanious, fetid discharge. The ulcer bleeds easily.

Chief Signs.—Glandular enlargement in either inguinal group; pain; biopsy.

Less Common Causes.—Tuberculosis; erosive and gangrenous balanitis (spirochete infection); erosive meatitis (in little boys); diabetic balanoposthitis; scabies; traumatic ulcer; granuloma inguinale; sarcoma; pseudochancere redux.

URETHRAL DISCHARGE

Gonorrhea (Gonorrheal Urethritis).—*Characteristics.*—The discharge begins as a serous exudate, later becoming seropurulent or purulent. When the disease becomes chronic involving the posterior urethral structures the discharge is represented as a "morning drop" (gleet, stricture).

Chief Signs.—History of recent exposure; inflamed pouting meatus; painful urination; painful erection; presence of gonococci in the discharge.

Non-Specific Urethritis (*Septic Urethritis*).—*Characteristics.*—The discharge is mild and usually only mucopurulent.

Chief Signs.—May be no history of exposure; urination and erection not painful; short duration; absence of the gonococcus in the discharge.

Urethrorrhea.—*Characteristics.*—This is a non-purulent, mucilaginous, bluish-white, sticky discharge which does not leave a stain.

Chief Signs.—Ungratified sexual desire usually in youth; may be excessive masturbation; absence of inflammatory elements microscopically.

Less Common Causes.—Prostatorrhea; spermatorrhea; urethral chancre; herpes of the urethra; papilloma of the urethra; carcinoma of the urethra (very rare); tuberculosis of the urethra; foreign body in the urethra.

FECAL URETHRAL DISCHARGE

Chronic Diverticulitis.—*Characteristics.*—This is perhaps the commonest cause of vesicocolic fistula, with pus in both the urine and feces.

Chief Signs.—See page 477.

Carcinoma of the Sigmoid, Cecum, or Rectum.—*Characteristics.*—Feces, gas, and particles of undigested food (tomato skins, corn, etc.) are passed through the urethra if the bladder wall becomes infiltrated by the growth and a fistula forms, as occasionally occurs.

Chief Signs.—Middle age; progressive constipation; passage of blood or blood and mucus per rectum; imperative desire for defecation with explosive movements of gas and mucus; dyspepsia; hemorrhoids (often with cancer of the rectum); bladder irritability; later, cachexia, pain, loss of weight; x-ray; proctoscopy; sigmoidoscopy; cystoscopy.

Rectovesical Fistula (*Traumatic*).—*Characteristics.*—Feces and gas may be passed through the urethra following the sloughing due to difficult and prolonged labor.

Chief Signs.—History of difficult labor; passages of feces through the vagina and urethra; vaginal examination; cystoscopy.

Appendicular Abscess.—*Characteristics.*—Feces and pus are passed through the urethra when the abscess has broken through into the bladder.

Chief Signs.—History of acute appendicitis; mass in the right iliac region palpable through the abdomen or rectum; cystoscopy; opaque enema (x-ray).

Carcinoma of the Bladder.—*Characteristics.*—Feces and gas may be passed if the bladder has infiltrated an adherent bowel or rectum with the formation of a fistula.

Chief Signs.—See page 556.

Less Common Causes.—Carcinoma of the uterus (opening into the bladder and rectum); prostatic abscess (opening into the rectum); perirectal abscess (opening into the bladder); intestinal tuberculosis (caseous mass opening into the bladder and rectum); acute diverticulitis (abscess opening into the bladder); traumatic vesico-intestinal fistula; congenital vesico-intestinal fistula.

PRIAPISM

Priapism is a condition of prolonged erection independent of the will or emotion of the individual. Such erections may be transitory or of long duration. Females as well as males may be affected. Aphrodisiac drugs, as cantharides, turpentine, alcohol, strychnin, cannabis indica, camphor, phosphorus, and damiana may cause priapism. In the young adult it may be due to sexual excitement, sleeping on the back, bladder distention, ill-fitting trousers, and masturbation. Pain may be absent or severe. In elderly men it may occur as a part of the "male menopause."

Spinal Syphilis (*Chronic Meningomyelitis*).—*Characteristics*.—This is one of the prominent causes of priapism. A prolonged erection occurs, usually following intercourse or exertion.

Chief Signs.—See page 540.

Fracture-Dislocation of the Spine (*Upper Dorsal Region*).—*Characteristics*.—Priapism may be present constantly or aroused on the slightest irritation.

Chief Signs.—See page 625.

Thrombosis of the Corpora Cavernosa.—*Characteristics*.—Priapism has often been found due to mechanical effect of thrombosis, usually the effect of sexual excess, at other times the result of systemic infection, neoplastic infiltration, and angioneurosis.

Contusion of the Spinal Cord.—*Characteristics*.—Sometimes very pronounced and prolonged priapism occurs, due perhaps to small hemorrhages into the substance of the cord.

Chief Signs.—History of a blow, sprain, or extreme flexion; motor or sensory palsy; diminished reflexes; negative x-ray picture.

Chronic Myeloid Leukemia.—*Characteristics*.—Priapism has been present in a large number of cases and may be the first symptom.

Chief Signs.—See page 524.

Circumcision.—*Characteristics*.—Priapism, or more properly, painful erection, often follows a circumcision for a few days. It is not a constant erection, but the penis is hyperirritable.

Nasal Polypi.—*Characteristics*.—Priapism has been found to be definitely related to nasal polypi in some cases and cured by their removal.

Chief Signs.—See page 162.

Prostatism.—*Characteristics*.—Although usually the combination of age and disease obliterates sexual power and desire, exceptionally the congested prostate excites abnormal erections.

Chief Signs.—See page 556.

Diabetes Mellitus.—*Characteristics*.—Priapism has occasionally been found in a diabetic without other evident cause.

Chief Signs.—See page 646.

Less Common Causes.—Phimosis; oxaluria; intestinal worms; balanoposthitis; vesical calculus; urethral calculus; gonorrhea; epilepsy; tetanus; hydrophobia; myelitis (upper dorsal region); fissure in ano; hemorrhoids; rectal impaction; gouty urethritis; cerebellar hemorrhage (middle lobe); pontine lesion; convalescence from acute disease; neoplasm of the penis; herpes progenitalis; prostatitis; cystitis;

hematoma of the penis; penile scar; condylomata; prostatic calculus; urethral stricture; cavernitis; tumor of the spinal cord (cervicodorsal region).

PAIN IN THE TESTICLE

Injuries to the testicle, whether contusions or wounds, are exquisitely painful and give rise to faintness, nausea, vomiting, and even convulsions. After an acute inflammation of the organ, even when no palpable nodule remains, the resulting cicatrization may cause an aching in the organ, especially after prolonged desire or sexual excitement.

Epididymitis (*Epididymo-Orchitis*).—*Characteristics*.—Pain in the beginning is of an aching character located in the testis and external abdominal ring, often with a dragging pain in the loin. As the epididymis (and testis) enlarge the local pain becomes more severe and there is exquisite tenderness.

Chief Signs.—Presence of a urethral discharge (if gonorrheal); palpation of the tense epididymis and swollen vas; edema of the scrotal tissues.

Orchitis.—*Characteristics*.—The pain is often excruciating and out of proportion to the swelling. No position gives ease. If the pain suddenly ceases it may mean gangrene.

Chief Signs.—Occurrence during mumps or after traumatism; moderate swelling of the testis, which retains its ovoid form; chills and fever; vomiting; scrotum red, swollen, edematous.

Torsion of the Cord.—*Characteristics*.—Pain is severe in the groin and testicle (which is usually misplaced).

Chief Signs.—Rapid swelling in the groin and scrotum with exquisite tenderness; chills and fever; vomiting.

Neuralgia of the Testicle.—*Characteristics*.—Pain may be acute and darting, or heavy and dragging.

Chief Signs.—Sensitiveness of the testicle; absence of obvious cause; hypochondriasis.

Varicocele.—*Characteristics*.—There may be a sense of weight and dragging with occasional spasmodic pain along the cord. In a few cases the pain amounts to neuralgia.

Chief Signs.—Swelling above the testis (usually left); a sensation of a bag of worms on palpation; scrotum loose and flabby.

Nephrolithiasis.—*Characteristics*.—Pain may be felt in the testicle if a calculus is present in the pelvis of the kidney or upper ureter. In renal colic the pain may radiate down into the testicle.

Chief Signs.—See page 542.

Tuberculosis of the Epididymis.—*Characteristics*.—Pain is slight unless the onset is acute. The nodules are painful on pressure.

Chief Signs.—Age twenty-five to thirty-five years; epididymis hard, knotty, irregular; skin adherent; softening with fistulæ; concomitant tuberculosis of the cord, prostate, seminal vesicles, kidney.

Malignant Tumor of the Testicle (*Embryoma; Carcinoma; Sarcoma*).—*Characteristics*.—The pain is often slight throughout, but may be severe in the later stages. Testicular sensation is lost.

Chief Signs.—Rapid enlargement of the testis with retention of its oval shape, but later becoming nodular; enlargement of the scrotal veins; enlargement of the iliac and lumbar glands; invasion of the skin and inguinal glands.

Less Common Causes.—Abscess of the testicle; abdominal aneurysm (pressing on the peripheral nerves); lumbar caries; carcinoma of the lumbar vertebræ; vesical calculus; tumor of the colon; ulcer of the urethra; excessive venery; acute appendicitis; hydrocele; inguinal hernia; hematocele; cyst of the epididymis or testis; prostatitis; seminal vesiculitis.

TENDERNESS OF THE TESTICLE

The testicles are normally sensitive to pressure, but the tenderness resulting from disease is a different kind of sensation, and one testicle only may be affected.

Varicocele.—*Characteristics.*—The testicle on the affected side is often oversensitive.

Chief Signs.—See page 561.

Acute Epididymitis (*Epididymo-Orchitis*).—*Characteristics.*—As the testis enlarges, the local pain becomes more severe, so that the swollen gland is exquisitely tender to pressure or to the touch.

Chief Signs.—See page 561.

Acute Orchitis.—*Characteristics.*—The testicle is so tender and painful that no position gives relief, and any handling of the organ may induce syncope.

Chief Signs.—See page 561.

Torsion of the Cord.—*Characteristics.*—The testicle is exquisitely tender.

Chief Signs.—See page 561.

Trauma.—*Characteristics.*—A non-inflammatory orchitis often follows contusions of the testicle. The organ is extremely sore.

Chief Signs.—See page 561.

Tuberculosis of the Epididymis.—*Characteristics.*—The epididymal lesion is almost always tender, rarely painful. In an early case the occurrence of one or more nodules in the epididymis, which are painful on pressure and which have not resulted from a preceding acute epididymo-orchitis, is suggestive of a tuberculous focus.

Chief Signs.—See page 561.

Less Common Causes.—Abscess of the testicle.

LOSS OF TESTICULAR SENSATION

Malignant Tumor of the Testicle (*Embryoma; Carcinoma; Sarcoma*).—*Characteristics.*—Testicular sensation is lost.

Chief Signs.—See page 563.

Syphilis of the Testicle.—*Characteristics.*—Not only is the testicle painless, but it actually loses its testicular sensation. Indeed, the opposite apparently healthy organ is often equally insensitive, thereby evincing unsuspected implication in the disease.

Chief Signs.—See page 563.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—There is in many cases

a remarkable deficiency or even complete absence of deep tenderness in such organs as the testis, tongue, larynx, or mammae.

Chief Signs.—See page 468.

SWELLING OF THE TESTICLE

(*Testis and Epididymis*)

Hydrocele often accompanies affections of the testicle, and it may be necessary to aspirate to determine the condition of the testis and epididymis.

Epididymitis (*Epididymo-Orchitis*).—*Characteristics.*—A tender thickening of all the tissues and swelling of the globus, usually unilateral, is felt as a vertical enlargement posterior to the testis.

Chief Signs.—Acute onset; pain and tenderness along the posterior part of the scrotum, cord, and vas which may extend to the back; walking in a stooping posture with the legs apart; swollen vas; rapid swelling of the testicle; edema of the scrotum; may be urethral discharge containing gonococci.

Orchitis (*Inflammatory or Metastatic*).—*Characteristics.*—There is a moderate swelling with retention of the form of the testis.

Chief Signs.—Occurrence during an infectious disease (mumps, typhoid); pain severe and sickening radiating toward the hips and back; chill, fever, and vomiting; the scrotum red, swollen, and edematous; rarely suppuration; later atrophy.

Tuberculosis of the Testicle.—*Characteristics.*—One testicle is larger than the other. It is somewhat enlarged throughout, with large hard nodules at one end or the other of the epididymis or throughout its length. There may be lumps in the testis itself. They are tender but not painful unless acute.

Chief Signs.—Onset usually chronic in young men; enlarged hard, knotty vas deferens; may be nodules in the seminal vesicles and prostate; later adherent skin and fistula discharging thick, cheesy material; may be hydrocele; tubercle bacilli in the urine, prostatic secretion, or the pus; may be tuberculosis elsewhere.

Syphilis of the Testicle.—*Characteristics.*—One or both testicles grow slowly and painlessly, not attaining very great size. The testicle is wooden in hardness. The testis is either generally involved, evenly and densely hard, or else it is of uneven hardness with projecting small gummata. The epididymis may be hard also with a sharp “clam-shell” edge to the globus minor. The cord is not enlarged.

Chief Signs.—History or evidence of syphilis (second or third stage); chronicity; moderate hydrocele; anesthesia of the testis; never suppuration, but may be ulceration with hernia; therapeutic test; positive Wassermann.

Tumor of the Testicle (*Embryoma; Carcinoma; Sarcoma*).—*Characteristics.*—There is either a painless, uniform swelling which is evenly elastic, or a nodular swelling which is only elastic in places. It fluctuates when there are large cysts or a flaccid hydrocele. It may reach a large size.

Chief Signs.—Middle life; rapid course; depreciation of the general health; enlargement of the scrotal veins; enlargement of the iliac and lumbar glands; later, invasion of the scrotal tissues and inguinal glands (fungus); anesthesia of the testis.

Cysts of the Epididymis (*Spermatocele; Encysted Hydrocele of the Testicle*).

—*Characteristics.*—Irregular, painless, slow-growing fluid tumors are present, situated between the epididymis and the testicle; the cysts are heart-shaped and their walls usually thin and tense.

Chief Signs.—Circumscribed translucency; may be aching pain in the testicle, groin, or lumbar region; aspiration of a milky fluid full of spermatozoa.

Less Common Causes.—New growth of the epididymis; leprosy; Malta fever.

ATROPHY OF THE TESTICLE

Atrophy may normally occur in the senium. It may be a sequel of operation or injury in the region of the spermatic cord. When one testicle is smaller than the other, it is necessary to decide whether one is hypertrophied or the other atrophied.

Orchitis.—*Characteristics.*—Atrophy commonly follows orchitis, especially in mumps, and occurs after traumatic orchitis due to contusions or wounds.

Chief Signs.—See page 561.

Varicocele.—*Characteristics.*—In severe cases the testis on the side of the varicocele, usually the left, may gradually atrophy due to interference with its circulation.

Chief Signs.—Dilatation and elongation of the cord veins which feel like worms in the scrotum; loose, flabby scrotum; sensation of weight or dragging pain in the scrotum.

Cryptorchism.—*Characteristics.*—Imperfectly descended and misplaced testicles are almost always small.

Chief Signs.—Absence of the testicle from the scrotum and presence in an abnormal position from birth; recurrent attacks of pain.

Compression of the Spermatic Cord or Testicle.—*Characteristics.*—Atrophy of one testicle may follow compression of the cord by a scrotal hernia, spermatocele, or ill-fitting truss and by compression of the testicle by a hydrocele, hematocele, or elephantiasis.

Infantilism.—*Characteristics.*—The testicles do not develop fully but remain small in size.

Chief Signs.—Failure of appearance of the primary and secondary sexual characteristics, with retention of the mental and bodily conditions of childhood; obesity (Frölich type).

Eunuchoidism (*Hypogenitalism*).—*Characteristics.*—Atrophy is bilateral. The condition is produced by twisting the cords, thus inducing a traumatic orchitis.

Chief Signs.—Increased height; defective development of the secondary sexual characteristics; skin delicate and wrinkled; striking diminution in the size of the testicle, scrotum, and penis.

Less Common Causes.—Injuries to the brain or spinal cord; x-ray; typhoid fever.

SWELLING OF THE SCROTUM

Vaginal Hydrocele (*Symptomatic and Idiopathic*).—*Characteristics.*—A tense, pear-shaped, fluctuating swelling of the scrotum is present, which grows from below

upwards. It is usually situated in front of the testicle, but may lie behind or envelop the organ. It is flat on percussion, has no impulse on coughing unless it extends into the inguinal canal, and is translucent.

Chief Signs.—Onset often acute if symptomatic (caused by disease of the testis or epididymis); onset chronic if idiopathic; painlessness; aspiration of straw-colored fluid.

Congenital Hydrocele.—*Characteristics.*—This form is clinically similar to the above, but reducible. When the fluid is forced back into the abdomen the scrotum fills from below.

Chief Signs.—Occurrence in infancy.

Infantile Hydrocele.—*Characteristics.*—This is also clinically similar to vaginal hydrocele. It is not reducible but extends up to the inguinal canal.

Chief Signs.—Occurrence in infancy.

Encysted Hydrocele of the Cord.—*Characteristics.*—The character is that of vaginal hydrocele but the cyst is situated above the testicle and about the vas. Sometimes it may be reduced into the inguinal canal, but never into the abdomen. It may rarely be due to the accumulation of fluid in an old hernial sac. A similar condition may occur in females in the canal of Nuck (hydrocele of the round ligament).

Chief Signs.—Occurrence usually in children.

Multilocular or Diffuse Hydrocele of the Cord.—*Characteristics.*—There is a smooth, rounded, translucent, and baggy enlargement of the cord from the testis to the inguinal canal. It may be partly reducible and give a slight impulse on coughing.

Cysts of the Epididymis (Spermatoceles).—*Characteristics.*—Irregular, painless, slow-growing fluid tumors are present, situated between the epididymis and the testicle; the cysts are heart-shaped, and their walls thin and tense.

Chief Signs.—See page 563.

Hematocele.—*Characteristics.*—The signs are those of hydrocele of the vaginal sac, cord, or testicle, except that the swelling is doughy or solid, not translucent, and there may be ecchymosis of the skin.

Chief Signs.—History of injury or operation (sometimes spontaneous); incision in some cases, revealing clot.

Edema of the Scrotum.—*Characteristics.*—The scrotum is enlarged and edematous without the signs of hydrocele.

Chief Signs.—Presence of a general edema and heart or kidney disease.

Scrotal Hernia.—*Characteristics.*—The scrotum is large, containing omentum and intestines. The swelling comes down from above, gives an impulse on coughing, is usually reducible, is dull or resonant on percussion, is doughy to the feel, and is not translucent. Gurgling sounds may be heard during reduction.

Elephantiasis (Lymph Scrotum).—*Characteristics.*—The scrotum may be very large and pendulous from thickening of the skin and subcutaneous tissues. The skin may be inflamed and brawny. The penis may be buried. The skin is coarse and corrugated.

Chief Signs.—Occurrence in the tropics; recurring attacks of dermatitis, edema, and fever; presence of the *filaria sanguinis hominis* in the blood at night; may follow extirpation of the inguinal glands or inguinal adenitis.

Torsion of the Cord.—*Characteristics.*—The scrotum and groin swell rapidly.

Chief Signs.—Sudden pain and swelling usually following an injury; tenderness; chill, vomiting, faintness; subsidence of the systemic disturbance after the first shock; may be gangrene of the testicle.

Less Common Causes.—Periurethral abscess; scrotal abscess from wounds; insect bites; chancre of the scrotum; condyloma; sebaceous cyst; emphysema; erysipelas; chylocele; hydatids; extravasation of urine; necrosis of the pubic bones.

SCROTAL SORES

Tuberculosis of the Epididymis.—*Characteristics.*—If the tuberculous nodule progresses rather than undergoes cure, the scrotal skin becomes adherent, thinned, and finally perforated, leaving a shallow ulcer with thin, undermined edges, and discharging thin pus.

Chief Signs.—See page 562.

Syphilis of the Testicle.—*Characteristics.*—The gumma if untreated may soften and ulcerate through the scrotal skin in a manner similar to tuberculous disease, leaving a clearly defined ulcerated area with sharply cut margins, and a wash-leatherlike base. The gummatous granulation tissue may fungate through the scrotal aperture, forming a yellowish necrotic mass.

Chief Signs.—See page 563.

Abscess of the Testicle.—*Characteristics.*—The scrotal tunic may become inflamed and adherent, while softening occurs later, leaving an ulcer and a sinus discharging pus.

Chief Signs.—Presence of urethral disease, a specific fever, torsion of the testis; acute pain commencing in the testicle, with rapid and extremely tender swelling of the organ, followed by abscess formation.

Urinary Fistula.—*Characteristics.*—An abscess may form and open through the scrotal skin from a periurethral abscess accompanying an acute urethritis or formed by septic infection behind a urethral stricture. A small amount of urine may leak through the opening during micturition.

Chief Signs.—History and symptoms of acute urethritis or stricture; evidence of an abscess, usually with multiple fistula formation.

Chancre.—*Characteristics.*—The sore has raised edges and a rolled appearance but only slight induration when occurring here. It does not heal under ordinary antiseptic treatment.

Chief Signs.—Discrete enlargement of the inguinal glands; appearance of secondary symptoms five or six weeks after development; dark-field examination (spirochetes); Wassermann (may or may not be positive); therapeutic test.

Epithelioma of the Scrotum (*Chimney-Sweep's Cancer*).—*Characteristics.*—The disease begins as one or more small, soft warts or tubercles, usually at the lower forepart of the scrotum. These remain unchanged for a time, but finally indurate slightly, become excoriated, scab over, and ulcerate, the ulcer extending backward and destroying, with more or less rapidity, the whole scrotum. The ulcer has hardened, irregular, everted, knotty borders, and a hard, uneven, unhealthy looking base. Exceptionally the warty growth develops into a large cauliflowerlike mass.

Chief Signs.—Chronicity; inguinal glands involved late; biopsy.

Less Common Causes.—Suppurating cysts; mucous tubercles; gangrene of the scrotum.

ANOMALIES OF THE EXTERNAL GENITALIA

Atresia of the Urethra.—*Characteristics.*—Atresia is commonest at the meatus, but may occur at any part of the canal. The entire urethra may be replaced by a fibrous cord.

Chief Signs.—Occurrence from birth; difficult micturition; may be patent urachus.

Congenital Stricture of the Urethra.—*Characteristics.*—This is common and usually located at the meatus (narrow meatus).

Chief Signs.—Occurrence from birth; difficult micturition.

Exstrophy of the Bladder (*Ectopia Vesicæ*).—*Characteristics.*—The lower abdominal wall and front of the bladder are absent; the pubic bones are separated, their ends being united by a strong fibrous band. The posterior wall of the bladder, pressed out by the intestines, forms a mottled red, tomatolike tumor, occupying the position of the symphysis pubis. The penis is rudimentary and affected by complete epispadias.

Epispadias.—*Characteristics.*—This is a congenital deformity in which the urethra opens on the dorsum of the penis. Complete epispadias is always associated with extroversion of the bladder (see above).

Chief Signs.—Incontinence of urine; functional derangement of erection and emission.

Hypospadias.—*Characteristics.*—The urethral canal terminates in the lower wall of the urethra, either at the glans (balanitic hypospadias), at the penoscrotal angle (penile hypospadias), or in the perineum (perineal hypospadias), in the latter the scrotum being cleft and the penis rudimentary. The penis is usually curved downward and may be adherent to the scrotum.

Chief Signs.—Imperfect erection; dribbling at the end of urination; impotence from inability to throw the semen into the vagina.

Phimosis.—*Characteristics.*—The orifice of the prepuce is so small that the glans penis cannot be uncovered. The orifice may even be absent. The foreskin may be redundant.

Chief Signs.—Difficult micturition; irritation.

Paraphimosis.—*Characteristics.*—The prepuce is retracted behind the corona and cannot be replaced.

Chief Signs.—Glans penis swollen and livid; the prepuce tense, shining, edematous, and behind the corona, with a deep sulcus above.

Cryptorchism (*Undescended Testicle*).—*Characteristics.*—There is absence of one or both testicles from the scrotum and their presence elsewhere. The testis may be retained inside the abdomen or arrested in the inguinal canal or just under the pubic bone. Ectopia testis is a condition in which the testis has lodged at some point out of its normal course (the perineum, the saphenous opening, the opposite side of the scrotum, at the base of the penis). The testis is sometimes inverted, turned upside down in the scrotum, or rotated. The re-

tained testicle is apt to be small and its spermatogenic function impaired proportionate to the pressure to which it is subjected.

Chief Signs.—May be pain; may be hernia or hydrocele; may be torsion of the cord; may be attacks of inflammation; proneness to cystic or malignant degeneration; sterility (when both are retained).

Less Common Causes.—Absent urethra; dilatation and diverticula of the urethra; abnormal position of the meatus; double urethra; termination of the ejaculatory ducts in a separate canal; termination of the urethra in the groin; double penis; absence of the penis; apparent absence of the penis (buried beneath the integument of the abdomen, thigh, or scrotum); hermaphroditism; bifid prepuce; absence of the prepuce; pseudohermaphroditism (failure of union of the lateral halves of the scrotum); polyorchism; anorchism; synorchism.

SKIN AFFECTIONS OF THE MALE GENITALIA

(See also "Ulcers of the Penis," page 558; and "Scrotal Sores," page 566.)

Condylomata Acuminata (*Venereal Warts; Papillomata*).—*Characteristics.*—Multiple, pedunculated or flat, highly vascular, papillary overgrowths occur on the penis, usually just behind the corona glandis, but are also encountered anywhere within the cavity of the prepuce. They are found also upon the scrotum. When numerous they are bathed in a fetid, puriform secretion.

Chief Signs.—Presence of an irritating discharge, or uncleanness.

Condylomata Lata.—*Characteristics.*—Flat vegetating outgrowths may occur on the foreskin. They have an eroded, irregular, red surface with a foul secretion.

Chief Signs.—Evidence of syphilis; dark-field examination (spirochetes).

Mucous Patches (*Erosive Secondary Syphilids*).—*Characteristics.*—Superficial erosions may occur upon the foreskin. The deeper layers may be freely exposed and there may be an exudation.

Chief Signs.—Evidence of syphilis; dark-field examination (spirochetes).

Sebaceous Cysts.—*Characteristics.*—These may occur in the prepuce and on the scrotum (particularly on the raphé). They shine white through the distended skin to which they are attached at one point, and when opened they exude a cheesy material.

Gumma.—*Characteristics.*—A small gummatous deposit may occur in the glans, on the prepuce, and rarely in the urethra and corpora cavernosa.

Chief Signs.—History of syphilis; positive Wassermann; therapeutic test.

Scabies (*The Itch*).—*Characteristics.*—Papules, crusted and confluent lesions occur on the glans or skin of the penis, closely resembling the venereal sores. Typical burrows may be found.

Chief Signs.—Intense itching; similar lesions in typical situations (fingers, wrists, axillæ, lower abdomen, anal region).

Eczema.—*Characteristics.*—The erythematous variety is the form usually occurring on the scrotum. It may involve the penis, perineum, and thigh. It has a red, scaly or crusted, fissured appearance, and may itch intensely.

Intertrigo.—*Characteristics.*—There is an irritating erythema in the folds between the scrotum and the thighs. The surface may be moist and macerated.

Erythrasma.—*Characteristics.*—In men with delicate skin, especially in summer, there is often a slightly brown discoloration of the scrotum and thigh, where the two surfaces lie habitually in contact. It sometimes gives rise to mild local erythema and considerable itching.

Chief Signs.—Presence of the *Microsporon minutissimum* in the scrapings.

Eczema Marginatum (*Tinea Cruris*).—*Characteristics.*—One or more small round patches, red, elevated, and itchy, occur just where the scrotum habitually lies in contact with the thighs. It spreads circumferentially, healing in the center. The border is sharply defined, and the eruption is composed of papules, vesicles, excoriations, and crusts.

Chief Signs.—Chronicity; tendency to relapse; presence of the trichophyton among the scales.

Pediculosis Pubis (*Crab-Lice*).—*Characteristics.*—The ova, or nits, are found upon the hair shafts of the pubis and scrotum. The crab-louse may be found.

Chief Signs.—Itching; presence of scratch marks and abrasions.

Lichenification (*Neurodermite*).—*Characteristics.*—The skin of the scrotum becomes darker in color and thickened, the normal lines being increased, resulting in flat, irregular papules, some of which have a faceted appearance.

Chief Signs.—Occurrence in neurotic individuals; intense itching, worse at night; chronicity.

Acanthosis Nigricans.—*Characteristics.*—Coalescent warty growths occur in the genitocrural folds, of a grayish-yellow to almost black color. Superficial furrows are present.

Chief Signs.—Presence of abdominal carcinoma (in adults); presence of similar lesions on the neck and other flexures and in the mouth; may be dystrophic nail changes and alopecia.

Less Common Causes.—Lichen planus; herpes zoster; lupus vulgaris; leprosy; urticaria; dermatitis venenata; chiggers; erysipelas.

THE FEMALE GENITALIA

SYMPTOMS	PAGE
Leukorrhea (White Vaginal Discharge)	570
Uterine Bleeding (Menorrhagia and Metrorrhagia)	572
Dysmenorrhea (Painful Menstruation)	575
Amenorrhea	577
Malformations of the External Genitalia	578
Swellings of the Vulva	578
Ulcers of the Vulva	579
Skin Affections of the Vulva	580
Pruritus Vulvæ	581
Abnormalities Noted by Digital and Bimanual Palpation	582

Abnormalities Noted by Speculum Examination	586
Dyspareunia	589

See also "Painful or Difficult Urination," page 822; "Blood in the Urine," page 823; "Eneuresis," page 827; "Pain in the Iliac and Inguinal Regions," page 476; and "Pain in the Hypogastrium and Pelvis," page 482.

For "Sterility in the Female," see page 800, and "Impotence," page 727.

LEUKORRHEA

(*White Vaginal Discharge*)

Many constitutional conditions give rise to what might be termed a constitutional (non-inflammatory) endometritis of which leukorrhea is the only constant symptom. The chief causes are: anemia, debility, heart disease, tuberculosis, scrofula, gout, rheumatism, chlorosis. This type of leukorrhea (functional leukorrhea) is usually mild. In every case, however, some local condition should be searched for.

Gonorrhea (*Acute Endocervicitis; Acute Urethritis; Acute Vulvitis; Acute Vaginitis*).—*Characteristics*.—A persistent mucopurulent discharge is seen coming from the cervix, urethra, or vulvovaginal glands. Such a discharge is usually of gonorrheal origin.

Chief Signs.—History of infection; redness and soreness (vulvitis); gonorrheal macules about the mouths of Bartholin's ducts and about the vestibule near the para-urethral glands; frequent and painful urination (urethritis); speculum examination, showing stringy pus coming from the cervix if involved; vaginal walls rough, red, and tender (vaginitis); demonstration of the gonococci in smears.

Endocervicitis.—*Characteristics*.—Leukorrhea is the only distinctive symptom. The discharge is clear, thick, and tenaceous like the white of egg, and at times very profuse. If there is suppuration, the secretion is opaque and creamy.

Chief Signs.—History of gonorrheal or septic infection; palpation of the cervix, showing swelling and softness with a patulous os; speculum examination, revealing the origin and character of the discharge, an area of erosion around the os, patulous and congested cervix; negative smear unless the gonococcus is present.

Septic or Acute Endometritis.—*Characteristics*.—A purulent or sanguino-purulent discharge escapes from the cervix. It may be fetid and offensive (saprophytic infection), or odorless (streptococcic infection).

Chief Signs.—History of labor, abortion, or instrumentation; chills and fever; intermittent or continuous uterine pain; passage of blood clots if the uterus is not completely emptied; large tender uterus with patulous cervix; speculum examination, revealing a free purulent discharge coming from the uterus.

Retrodisplacement of the Uterus.—*Characteristics*.—Leukorrhea is frequently

present and is often profuse; the discharge is non-irritating and varies from a white to a whitish-yellow.

Chief Signs.—See page 574.

Anteflexion of the Uterus.—*Characteristics.*—The leukorrheal discharge is non-irritating, whitish, and more or less profuse, especially just before and after the menstrual flow.

Chief Signs.—See page 576.

Prolapse of the Uterus.—*Characteristics.*—A non-irritating, whitish or whitish-yellow discharge may be present.

Chief Signs.—See page 575.

Carcinoma of the Uterus (Cervix or Fundus).—*Characteristics.*—Leukorrhea is an early symptom; the discharge is at first serous and watery, odorless, frequently streaked with blood, and often very profuse; after ulceration begins it becomes mucopurulent, putrid, and mixed with blood or tissue fragments. The discharge may cause vulvar excoriations or pruritis.

Chief Signs.—See page 573.

Cervical Polyp.—*Characteristics.*—Leukorrhea is more or less constant and remains a simple leukorrhea unless infection occurs, when it becomes profuse, purulent, and offensive.

Chief Signs.—See page 576.

Uterine Fibroids.—*Characteristics.*—Leukorrhea is more or less constant, generally serous and profuse (hydrorrhea); sometimes it may be mixed with blood or become purulent, especially in sloughing fibroids.

Chief Signs.—See page 573.

Salpingitis.—*Characteristics.*—As the acute process subsides there is always a mucopurulent leukorrhea.

Chief Signs.—See page 584.

Laceration of the Cervix.—*Characteristics.*—There is usually a vaginal discharge due both to the cervical injury and to the accompanying endometritis. When there is a preponderance of cervical secretion in the discharge it is jelly-like and sticky and may be pulled out into long threads which are hard to detach from the cervical canal.

Chief Signs.—History of labor; menstrual disturbances (pain and prolongation); may be sterility or abortion; notch in the cervix felt on vaginal examination; speculum examination, revealing the tear, eversion and erosion of the mucous membrane, enlargement, and a cystic condition.

Chronic Endometritis.—*Characteristics.*—A chronic leukorrhea is present, slight or free in amount, and mixed with the cervical mucus. Chronic leukorrhea is the outstanding symptom; in some cases it is the only symptom.

Chief Signs.—History of previous acute endometritis (gonorrheal or septic); painful, irregular, prolonged menstruation; backache and weight in the pelvis; may be sterility; enlarged uterus; speculum examination, revealing the discharge coming from the uterus (more than can be accounted for by the condition of the cervix); curettage.

Ulcers of the Vulva.—*Characteristics.*—There is usually a discharge, either thin and watery, purulent, or sanguinopurulent, depending on the kind of ulcer present.

For causes of Ulcers of the Vulva, see page 579.

Ulcers of the Vagina.—*Characteristics.*—There is more or less discharge of a watery or purulent nature.

Chief Signs.—See page 587.

Ulcers of the Cervix.—*Characteristics.*—The most prominent symptom is a vaginal discharge, which is sometimes streaked with blood.

Chief Signs.—See page 587.

Chronic Vaginitis.—*Characteristics.*—There is a chronic yellowish vaginal discharge.

Chief Signs.—Occurrence usually in children; bladder irritability; redness and soreness of the vulva from irritation; if an adult, speculum examination, revealing tenderness, redness, chronic thickening and roughening of the vaginal wall; may be gonococci in the smear.

Adhesive Vaginitis.—*Characteristics.*—There is a slight chronic sticky or “gluey” discharge, which in exceptional cases is free and purulent.

Chief Signs.—Occurrence near or after the menopause; vulvar irritation; may be bladder irritability; vaginal examination, revealing the vaginal walls adherent in spots, especially in the upper part of the vagina.

Less Common Causes.—Pelvic peritonitis; chorio-epithelioma (early offensive watery leukorrhea); uterine tumors incarcerated in the pelvis; subinvolution of the uterus; hyperinvolution of the uterus; visceroptosis; constipation; sexual excesses; masturbation; sarcoma of the uterus; vaginitis (catarrhal or granular); intestinal worms (in children).

UTERINE BLEEDING

(Menorrhagia and Metrorrhagia)

Menorrhagia is excessive menstruation, either an increased amount or a prolonged flow, without intermenstrual bleeding. If clotting is considerable the case is to be regarded as menorrhagia. The amount of bleeding normally varies in different individuals, being greatest in a robust, full-blooded matron and smallest in a delicate, poorly nourished unmarried woman. Menorrhagia during the first decade following puberty is not uncommon and it may be severe and intractable. Excessive or abnormal coitus is said to be a cause of menorrhagia.

Metrorrhagia applies to uterine bleeding that occurs independently of menstruation and ovulation, and is always pathologic.

Many general conditions may cause irregular bleeding from the uterus, among which are anemia, hemophilia, leukemia, certain acute infectious diseases, emotional disturbances, gout, scurvy, malaria, diseases of the heart, lungs, and liver.

Abortion and Miscarriage.—*Characteristics.*—Abortions are a frequent cause of uterine bleeding. Premonitory bleeding may persist for weeks or be promptly followed by expulsion of the ovum. When abortion becomes imminent the hemorrhage is usually quite profuse and accompanied by cramplike pains. If the abortion is incomplete the hemorrhage usually persists until the retained structures are expelled or removed.

Chief Signs.—History of pregnancy; history of interference in artificially in-

duced cases; pain accompanied by the passage of blood, clots, placental or fetal tissues; direct examination (soft and patulous cervix, enlarged uterus).

Uterine Fibroids.—*Characteristics.*—Menstrual hemorrhage is common in interstitial and submucous growths; it usually increases the amount and duration of the menstrual flow (menorrhagia), and in some cases it eventually occurs also between the periods. As a rule, exertion, intercourse, and emotions increase the hemorrhage. A fibroid polypus is generally accompanied by constant bleeding and also an increase in quantity of the menstrual flow.

Chief Signs.—Leukorrhea, dysmenorrhea, pelvic pain, vesical and rectal symptoms from pressure; sterility or abortion; anemia; digestive disturbances; bimanual examination (enlarged uterus with an inseparable smooth, hard tumor).

Chronic Endometritis.—*Characteristics.*—Bleeding is rare but menorrhagia or metrorrhagia may occur as later symptoms; usually there is a seropurulent leukorrheal discharge which may become at times serosanguinous or serosanguinopurulent.

Chief Signs.—History of laceration, displacement, tumors, or infection; leukorrheal discharge from the first, always more profuse before and after menstruation; lumbosacral pain; local examination (enlarged uterus and cavity, hemorrhagic os internum, discharge); examination of the scrapings.

Carcinoma of the Uterus (Cervix or Fundus).—*Characteristics.*—This is the first suspicious symptom noticed; it usually begins as a show of blood following coitus, strain, or exercise. The vaginal secretions may be streaked with blood or the linen stained. Later the menstrual flow may become profuse and irregular bleedings occur, increasing in amount and duration until they become more or less continuous. If the patient has passed the menopause, bleeding is taken for the return of menstruation. In some cases there may be only an increase in the duration and quantity of the menstrual flow. The discharge is foul smelling.

Chief Signs.—Age usually from thirty to sixty years; may be watery discharge, occasionally blood-tinged; examination by palpation and inspection; microscopic examination of the scrapings or tissue.

Ectopic Pregnancy.—*Characteristics.*—Of special significance is a history of a postponed, skipped, prolonged, or anomalous menstruation which is followed by metrorrhagia, irregular in occurrence and in amount. Bleeding is especially observed at the time of a painful paroxysm, which bleeding may be more or less profuse, or be only a persistent spotting of a reddish-brown discharge, mixed with mucus which does not clot.

Chief Signs.—History of previous period of sterility; period of amenorrhea with other symptoms of early pregnancy (nausea, sore breasts); sharp knifelike pains in the pelvis or soreness and discomfort in the lower abdomen; soft cervix; displaced uterus; palpable extra-uterine mass; symptoms of acute internal hemorrhage when rupture occurs (pallor, tachycardia, low pressure, sweats).

Menopause.—*Characteristics.*—Uterine hemorrhage may be frequently prolonged or excessive, but it is to be remembered that menorrhagia or metrorrhagia at the menopause is to be looked upon with suspicion and special investigations made to exclude cancer, fibroid, polypus, etc.

Chief Signs.—Age between forty and fifty usually; faintness; amenorrhea; vasomotor flushes; vertigo; perspiration; palpitation; hypertension; nervous phenomena.

Placenta Prævia.—*Characteristics.*—The most characteristic symptom is hemorrhage occurring usually after the seventh month, coming on without warning, often during sleep, and ordinarily ceasing spontaneously to recur, though it is sometimes continuous. The bleeding may not begin until labor sets in, when it varies from slight to severe and even fatal hemorrhage.

Chief Signs.—Presence of pregnancy; usually a soft, succulent cervix with a patulous canal admitting the finger; presence of spongelike or soggy thick tissue between the finger and the presenting part of the fetus.

Inversion of the Uterus.—*Characteristics.*—Chronic forms of inversion cause persistent and at times severe hemorrhage. Acute inversion is accompanied by profuse hemorrhage.

Chief Signs.—Acute inversion: sudden occurrence after forcible expulsion of the placenta, usually followed by shock, severe hypogastric pain, rectal and vesical tenesmus; in chronic inversion may be few or no symptoms except metrorrhagia and vesical irritability; vaginal exploration (large globular mass filling the vagina with a funnel-shaped depression at the upper part of the pelvis).

Retrodisplacement of the Uterus (*Retroversion; Retroflexion*).—*Characteristics.*—Extensive menstruation or menorrhagia is often observed and is due to uterine congestion and hypertrophy of the endometrium.

Chief Signs.—Backache; feeling of weight or dragging in the pelvis; a sensation of fullness in the bowels; profuse white or whitish-yellow leukorrhea; may be sterility; vertex or occipital headache; digestive and nervous disturbances; vaginal examination, revealing the dislocated uterus.

Salpingo-Oöphoritis.—*Characteristics.*—There is usually a shortening of the intermenstrual periods with lengthening of the duration of the flow, which may last from a week to ten days or even longer.

Chief Signs.—Mucopurulent leukorrhea; pelvic pain often intermittent or colicky; lumbar backache; dysuria; dyschesia; premenstrual and menstrual pain; sterility; debility; painful mass or masses on vaginal examination behind or at the side of the uterus.

Subinvolution of the Uterus.—*Characteristics.*—Menorrhagia and metrorrhagia are commonly present.

Chief Signs.—History of recent confinement; lumbosacral pain and bearing-down sensation in the pelvis; impairment of the general health; physical examination (relaxed pelvic floor, cervical laceration, symmetrically enlarged uterus, more or less insensitive).

Chronic Oöphoritis.—*Characteristics.*—With cystic oöphoritis there may be menorrhagia or metrorrhagia.

Chief Signs.—Pain in the ovarian region aggravated by standing or walking and during menstruation extending to the thigh; dyschesia; dysmenorrhea; dyspareunia; pain in the breasts; sterility; "neurasthenic" symptoms; enlargement and tenderness of the ovary on digital examination.

Arteriosclerosis (*With Hypertension*).—*Characteristics.*—Hypertension may be reckoned with as a cause of menorrhagia at any period of life, but particularly when nearing the onset of the menopause.

Chief Signs.—Presence of hypertension as shown by the sphygmomanometer; absence of gross uterine disease.

Prolapse of the Uterus.—*Characteristics.*—Menorrhagia is frequently present.

Chief Signs.—Lumbosacral backache; feeling of weight or pressure in the pelvis; rectocele with rectal symptoms; vesical irritability; leukorrhea; headache; digestive disturbances; “neurasthenia”; vaginal examination, best in the erect posture, showing the amount of descent.

Cervical Polyp.—*Characteristics.*—Menorrhagia and metrorrhagia are constant; sometimes the bleeding is slight and may follow exertion, straining, or intercourse; in other cases it may be profuse and persistent.

Chief Signs.—See page 576.

Laceration of the Cervix.—*Characteristics.*—There is usually an increased menstrual flow, due largely to the subinvolution and the endometritis. Bleeding may occur after coitus.

Chief Signs.—See page 571.

Less Common Causes.—Polypoid gland hypertrophy; ulcers of the vagina; ulcers of the cervix; arteriosclerosis of the uterine blood-vessels; hyperthyroidism; hyperpituitarism; ovarian hyperactivity; alcoholism; cirrhosis of the liver; functional congestion; foreign body in the uterus; sarcoma uteri; chorio-epithelioma; hydatidiform degeneration of the chorion; phosphorus poisoning; purpura; fecal impaction; pelvic tumors; tumor of the rectum; tumor of the bladder; varicocele; hematoma; tumors and cysts of the broad ligaments; scurvy; tuberculosis of the uterus; ovarian tumors (especially with twisted pedicles or when malignant); acute yellow atrophy of the liver; emmenagogues; lead poisoning; syphilis; parametritis (pelvic cellulitis); hyperinvolution of the uterus; chronic metritis.

DYSMENORRHEA

(Painful Menstruation)

Congenital Malformation.—*Characteristics.*—There are intermittent, griping and colicky pains, beginning at the same time as or just before the blood flow.

Chief Signs.—May be little or no discharge of blood; bimanual and vaginal examinations, revealing underdeveloped organs, atresia, cervical stenosis, or a long conical cervix; difficulty in passing a sound.

Chronic Endometritis and Endocervicitis.—*Characteristics.*—There is a continuous aching pain beginning some hours or days before the flow and often relieved by the flow.

Chief Signs.—Leukorrhea (more profuse before and after menstruation); lumbosacral backache; menorrhagia and metrorrhagia; anemia and “neurasthenia”; enlarged sensitive uterus; sensitive, congested endometrium; may be gonococci in the smear (endometritis); swollen, everted cervix (endocervicitis).

Retrodisplacement of the Uterus (Retroversion; Retroflexion).—*Characteristics.*—Dysmenorrhea of a congestive type is present similar to that of endometritis.

Chief Signs.—Pelvic pain and tenesmus; lumbosacral pain; shortening of the intermenstrual period with increased menstrual flow; leukorrhea; vesical irritability; dyschesia; sterility; digestive disturbances and constipation; bimanual examination, revealing the fundus posterior and the cervix directly down or forward (retroversion) or the fundus bent back on the cervix (retroflexion).

Anteflexion of the Uterus.—*Characteristics.*—Dysmenorrhea is severe, usually beginning before the flow as cramplike pains and relieved by the onset of the flow (obstructive dysmenorrhea). The dysmenorrhea dates from puberty.

Chief Signs.—Leukorrhea; sterility; dyspareunia; frequent micturition; bimanual examination, revealing a conical cervix with a small os and the uterus flexed anteriorly on the cervix.

Salpingo-Oöphoritis.—*Characteristics.*—There is premenstrual and menstrual dull aching pain.

Chief Signs.—Leukorrhea; iliac tenderness and rigidity; intermenstrual pain, increased by standing or walking; dysuria; dyschesia; bimanual examination, revealing large, tender tube and ovary (unilateral or bilateral).

Cystic Ovary (*Cystic Oöphoritis*).—*Characteristics.*—Shooting or knifelike pains occur at the menstrual period.

Chief Signs.—Pelvic pain; backache; menorrhagia; nervousness; enlarged, tender, knobby ovary.

Membranous Dysmenorrhea (*Exfoliative Endometritis*).—*Characteristics.*—The pain is at first aching and continuous, then colicky and spasmodic, and is relieved by the expulsion of the cast.

Chief Signs.—Expulsion of shreds or cast of the uterus at each menstrual period.

Cervical Polyp.—*Characteristics.*—Pain is present before and during menstruation, and there may be cramplike pains at any time due to expulsive efforts of the uterus.

Chief Signs.—Occurrence usually after forty; leukorrhea; menorrhagia and metrorrhagia; sterility; vaginal examination, revealing the polypus protruding from the cervix or felt with the sound or finger.

Submucous Fibroid of the Uterus.—*Characteristics.*—The pain is similar to that of polypi.

Chief Signs.—Menorrhagia; metrorrhagia; sterility; miscarriages; vaginal examination, revealing a fibroid protruding from the cervix or felt with the sound or finger.

Neuralgic Dysmenorrhea (*Ovarian Dysmenorrhea*).—*Characteristics.*—The pain, as a rule, begins before the flow and ceases with its appearance. In some cases it may continue intermittently or remittently during the entire flow, and in others it may not cease for some time after the period. It varies in severity and is not definitely localized, but shoots from the pelvis down the thighs or into the abdomen and thorax.

Chief Signs.—Negative pelvic examination; presence of a systemic cause; poor health; anemia; "neurasthenia," "hysteria," etc.

Pelvic Peritonitis.—*Characteristics.*—The pain is generally an exaggeration of that which is felt in the intermenstrual period, and is referred chiefly to the organs involved. It is situated mostly within the pelvis, in the back, hypogastric, and inguinal regions, and at times it may shoot down the thighs. It may be dull, heavy, bearing-down, or dragging, and is seldom as sharp and acute as in neuralgia. The pain usually precedes the flow and gradually ceases after it is established.

Chief Signs.—Pain and tenderness in the lower part of the abdomen; rigidity of the overlying muscles; constipation; tympany; vomiting; vesical irritability; fever; bimanual examination, revealing a gross pelvic lesion.

Less Common Causes.—Pelvic tuberculosis; ovarian tumor; tumor of the broad ligament; inflammation of the adjacent organs (bladder, rectum, appendix); functional pelvic congestion (due to constant standing, long walking, etc.); reflex nasal dysmenorrhea (relieved by intranasal cocainization).

AMENORRHEA

Absence or cessation of menstruation is physiologic during certain periods of a woman's life, namely, before puberty, after the menopause, and during pregnancy, the puerperium, and the lactation period. Amenorrhea is either primary or secondary, primary when the menses has never appeared (normally about the age of twelve to fourteen years), secondary when they disappear after the flow has once been established. Amenorrhea (artificial menopause) follows double oöphorectomy or hysterectomy. In severe cachexia and anemia, especially in cancer and syphilis, amenorrhea may occur. Acute febrile diseases often temporarily check the menses on account of debility (typhoid, pneumonia, the exanthemata, diphtheria, rheumatic fever). Pregnancy is always to be considered first in every case of secondary amenorrhea. If a virgin who has never menstruated by the age of sixteen years presents no local or general cause for primary amenorrhea, there may be said to be defective ovarian function.

Congenital Malformations.—*Characteristics.*—Amenorrhea is apparent rather than real, the individual who has never menstruated experiencing the same symptoms monthly as under normal circumstances but without the appearance of the flow.

Chief Signs.—Discovery by inspection of the vulva, by recto-abdominal bimanual palpation, and by abdominal palpation, of an imperforate vagina, imperforate hymen, absence of the vagina, imperforate cervix, or double uterus, with doughy distention of the vagina (hematocolpos), uterus (hematometra), fallopian tubes (hematosalpinx).

Chlorosis.—*Characteristics.*—Amenorrhea is very common.

Chief Signs.—See page 395.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—Amenorrhea associated with dyspepsia, palpitation, weakness, and slight fever constitutes one of the modes of onset of pulmonary tuberculosis in women and virgins.

Chief Signs.—See page 412.

Acromegaly.—*Characteristics.*—Amenorrhea is the earliest symptom in women.

Chief Signs.—See page 42.

Hyperinvolution of the Uterus.—*Characteristics.*—Prolonged amenorrhea occurs due to atrophic changes in the uterus and ovaries.

Chief Signs.—History of preceding labor or abortion; profuse leukorrhea; lumbosacral backache; vertical headaches; "neurasthenia"; bimanual examination, revealing a hard, atrophic uterus and a soft, atrophied, cyanotic cervix.

Ectopic Pregnancy.—*Characteristics.*—A period of amenorrhea is frequently noted with other symptoms of early pregnancy.

Chief Signs.—See page 573.

Less Common Causes.—Diabetes; Addison's disease; chronic alcoholism; anorexia nervosa; cretinism; myxedema; dementia præcox; congenital absence of

the organs of generation (uterus, ovaries, vagina); infantile uterus; dystrophia adiposogenitalis (Frölich syndrome); exophthalmic goiter; "hysteria"; lead poisoning; leukemia; lymphadenoma (Hodgkin's disease); melancholia; morphinism; mercurialism; obesity; postoperative amenorrhea; double cystic oöphoritis; cirrhosis of the liver (late stage); chronic nephritis (late stage); chronic heart disease (late stage); imbecility; double ovarian neoplasm; deficient ovarian activity.

MALFORMATIONS OF THE EXTERNAL GENITALIA

Preputial Adhesions.—*Characteristics.*—The prominent end of the clitoris seems to be absent. The folds of the labia minora, which encircle the clitoris, are agglutinated so that the glans clitoris is partially or entirely hidden.

Labial Adhesions.—*Characteristics.*—The labia minora may be adherent partially or completely.

Imperforate Hymen.—*Characteristics.*—There is no opening into the vagina and there has been no menstrual flow. There may or may not be some bulging of the hymen.

Absence of the Vagina.—*Characteristics.*—Rarely all of the lower part of the fused Muellerian cords fails of canalization causing absence of the vagina.

Double Vagina.—*Characteristics.*—This consists usually of a simple longitudinal septum dividing the vagina into two canals, extending the whole length of the vagina or only part way. One canal is usually much smaller than the other and placed to one side.

Less Common Causes.—Double vulva; hymen biforis; hymen biseptus; hymen cribriformis; hypospadias; epispadias; hermaphroditism.

SWELLING OF THE VULVA

Vulvitis.—*Characteristics.*—In acute forms the labia are swollen, hot, red, and painful. In chronic forms there is less swelling.

Chief Signs.—Local signs of irritation and inflammation; smarting on urination; discharge, profuse mucopurulent or fetid in acute forms, thinner and less profuse in chronic forms; excoriations; microscopical examination of the pus (may be gonococcus); urinalysis (sometimes glycosuria).

Bartholin's Abscess.—*Characteristics.*—There is an ovoid swelling in one or both labia opposite the orifice of the vagina.

Chief Signs.—Evidences of acute inflammation (heat, redness, pain, fluctuation); history of rapid enlargement (in Bartholin's cyst inflammatory signs are absent).

Varicocele of the Vulva (*Vulvar Varix; Varicose Veins of the Vulva*).—*Characteristics.*—There is a unilateral or bilateral swelling like a "bag of worms," bluish in color due to the enlarged veins.

Chief Signs.—Occurrence more commonly on the left side; history of repeated pregnancies; mass increased by standing; may be pain and feeling of fullness or tumefaction in the vulvar region.

Pudendal Hernia.—*Characteristics.*—An inguinal hernia, when it descends into

a labium, causes an elongated swelling constricted at its upper end; the swelling is usually smooth, regular, and elastic, and its size and tenseness are increased by coughing, standing, lifting, or straining. It disappears or becomes smaller on lying down.

Inflammation of the Labium (*Cellulitis; Erysipelas*).—*Characteristics*.—The parts become markedly swollen and discolored.

Chief Signs.—May be history of injury; local tenderness and pain; may be ecchymosis; constitutional symptoms (chills and fever).

Hematoma of the Vulva.—*Characteristics*.—A blue or violet colored swelling is present covered by tense, shiny skin, and often spreading up into the pelvis by the side of the vagina.

Chief Signs.—History of pregnancy or trauma.

Edema of the Vulva.—*Characteristics*.—The entire vulva is enormously swollen.

Chief Signs.—Presence of anasarca and kidney or heart disease.

Benign Tumor of the Vulva (*Fibroma, Lipoma, etc.*).—*Characteristics*.—There is a localized swelling of a consistency depending upon the character of the growth, with mechanical interference depending upon the size. Fibromas may be pedunculated.

Condylomata (*Papillomata; Venereal Warts; Veruccæ*).—*Characteristics*.—Single or multiple, pedunculated or sessile warts or excrescences are present on any part of the vulva, around the anus, on the inner surface of the thighs, and also on the vaginal walls.

Chief Signs.—Presence of an irritating discharge or uncleanness.

Sebaceous Cyst.—*Characteristics*.—This presents a rounded tumor, usually firm but elastic, freely movable on the deeper parts unless inflamed, and invariably attached to the skin at one point. When opened it exudes a cheesy material.

Less Common Causes.—Stasis hypertrophy of the vulva; hypertrophy of the labia; pseudo-elephantiasis (syphilis of the vulva affects the labium minor); elephantiasis (filaria; rare outside the tropics); labial or pudendal hydrocele (a rare cause of labial swelling due to effusion into the canal of Nuck); tumor of the round ligament; diphtheria of the vulva; tuberculosis of the vulva; sarcoma of the vulva; angioneurotic edema.

ULCERS OF THE VULVA

Chancre of the Vulva.—*Characteristics*.—A single indurated papule appears which ulcerates quickly, discharging a thin watery secretion. The genital chancre is rare in women.

Chief Signs.—History of infection three to six weeks previous; enlarged, painless inguinal glands; demonstration of spirochetes in the secretion; positive Wassermann (often negative in the first six weeks); appearance of secondary lesions in one or two months.

Chancroid.—*Characteristics*.—Multiple, auto-inoculable, soft, highly inflamed and painful ulcers are present. They have punched-out edges which are undermined and surrounded by an inflammatory zone. Chancre and chancroid may co-exist.

Chief Signs.—History of contact five or six days previous; glandular involvement (inguinal), usually one at a time; demonstration of Ducrey's bacillus; healing after cauterization with carbolic acid.

Syphilids (*Mucous Patches*).—*Characteristics.*—Superficial ulcerations appear on parts which are in close contact and subject to the irritating influences of heat and moisture. The secretion becomes profuse, purulent, and offensive, or the constant irritation may cause them to hypertrophy and become condylomata.

Chief Signs.—History of infection; secondary eruption; mucous patches in the mouth; positive Wassermann; dark-field examination (spirochetes).

Gumma.—*Characteristics.*—A round tumor develops on the labium majus which tends to break down and ulcerate with deep, undermined edges.

Chief Signs.—History of syphilis; positive Wassermann; therapeutic test.

Carcinoma.—*Characteristics.*—A small, hard, elevated nodule first appears situated in the skin or mucous membrane, and covered by several layers of thickened epithelium. Later on the nodule ulcerates and secretes a thin watery discharge having a foul or fetid odor. A purulent discharge may appear later. The margins and base are irregular in shape. The ulcer bleeds easily.

Chief Signs.—Age (middle life); pain, cachexia; pruritus vulvæ; enlarged inguinal glands; biopsy.

Lupus (*Tuberculous Ulcer*).—*Characteristics.*—Multiple, slow-growing, soft nodules appear with superficial ulceration and covered with bright red granulation tissue. The ulceration extends in various directions with healthy skin between the lesions, and induration is absent. The condition is painless.

Chief Signs.—Occurrence in early life; absence of cachexia; absence of enlarged glands; negative Wassermann; biopsy.

Herpes Vulvæ.—*Characteristics.*—Groups of small vesicles on an inflamed base appear, which rupture, forming small ulcers, healing slowly. The ulcers may coalesce and an offensive purulent discharge appear.

Chief Signs.—Tenderness, pain, burning, itching; shortness of the attack; history of previous attacks; absence of enlarged glands.

Less Common Causes.—Sarcoma; thrush; ulcus rodens vulvæ; granuloma inguinale; gangrene of the vulva; ulcus acutum vulvæ.

SKIN AFFECTIONS OF THE VULVA

(See also "Ulcers of the Vulva," page 579.)

Follicular Vulvitis.—*Characteristics.*—Small red papules are scattered over the labia at the bases of the hair follicles and in the mouths of the sebaceous glands. They may contain pus.

Chief Signs.—Occurrence in adults; vulvar irritation and pruritis.

Eczema of the Vulva.—*Characteristics.*—Vesicular eczema is the form generally seen here. The vesicles break down and form crusts. Chronic erythematous and squamous eczema may also occur.

Intertrigo (*Chafing*).—*Characteristics.*—There is hyperemia in the genito-crural creases. There may be erosion, a discharge, infiltration, fissuring, and pigmentation.

Chief Signs.—Burning and itching.

Pediculosis Pubis (*Crab-Lice*).—*Characteristics*.—Nits are found on the hairs. The lice may also be found. There are scratch marks and abrasions.

Chief Signs.—Itching.

Scabies (*The Itch*).—*Characteristics*.—Vesicles, papules, pustules, scratch marks, and burrows are seen about the external genitals.

Chief Signs.—Itching; occurrence of the lesions elsewhere (fingers, wrists, axillæ, lower abdomen, anal region).

Condylomata Lata (*Moist Papules*).—*Characteristics*.—Slightly elevated, flattened areas are present on the labia minora and inner surfaces of the labia majora. The surface may be eroded. Several of the papules may coalesce.

Chief Signs.—Other evidence of secondary syphilis; dark-field examination (spirochetes).

Condylomata Acuminata (*Venereal Warts*).—*Characteristics*.—Small, moist, pointed, papillary masses with a thick covering of epithelium occur singly or in groups or large numbers about the genitals, anus, and perineum.

Chief Signs.—Presence of an irritating discharge, or uncleanness; exclusion of syphilis.

Less Common Causes.—Erysipelas; prurigo; lichenification.

PRURITUS VULVÆ

Ordinary uncleanness may be a cause of vulvar itching. Irritating vaginal discharges may cause irritation of the vulva with consequent itching. Parasitic skin affections such as pediculosis and scabies may affect the vulva and produce itching. Itching of the vulva may result from intertrigo (simple dermatitis) due to excessive fat. Chronic congestion from diseases of the uterus, tubes, ovaries, or other pelvic structures may cause pruritus.

Kraurosis Vulvæ.—*Characteristics*.—A sense of heat and itching about the vulva occurs, associated with paroxysmal pain and marked sensitiveness.

Chief Signs.—Contraction of the introitus; age, usually near the menopause; white, dry skin of the labia studded with brown spots; tense skin, shriveled as by scar tissue, with a marked tendency to shrink and fissure.

Eczema of the Vulva.—*Characteristics*.—The chief symptom is itching about the vulvar region.

Chief Signs.—Appearance of an erythema with papules and vesicles; watery discharge which dries and forms scales and crusts.

Diabetic Vulvitis.—*Characteristics*.—The itching is constant and there may be local pain and tenderness.

Chief Signs.—Reddish, copper color of the tissues of the vulva and inner surface of the thighs; parchmentlike skin; may be eczematous changes; constitutional signs of diabetes with glycosuria and hyperglycemia.

Herpes Vulvæ.—*Characteristics*.—Itching and local tenderness are present.

Chief Signs.—Groups of small vesicles with an inflamed base, the vesicles not rupturing easily.

Menopause.—*Characteristics*.—Pruritus vulvæ may develop during the menopause due to atrophic changes, and be accompanied by an itching or burning sensation over other parts of the body.

Chief Signs.—See page 573.

Follicular Vulvitis.—*Characteristics.*—Itching is most marked when the disease involves the inner surfaces of the vulva.

Chief Signs.—Small red elevations about the hair follicles containing mucopurulent matter.

Less Common Causes.—“Hysteroneurosis”; cancer of the vulva; varicocele of the vulva; trichiasis vulvæ (intense itching); elephantiasis vulvæ; erysipelas of the vulva.

ABNORMALITIES NOTED BY DIGITAL AND BIMANUAL PALPATION

(See also “Abnormalities Felt per Rectum,” page 597.)

Colpocele (*Prolapsed Vaginal Wall*).—*Characteristics.*—The vaginal wall is felt to be relaxed and redundant, descending toward the introitus. It may be the anterior wall, the posterior wall, or both. There is some degree of prolapse of the uterus and a relaxed perineum.

Cystocele (*Prolapse of the Bladder*).—*Characteristics.*—As the fingers enter the introitus there is felt a bulging downward and outward of the anterior vaginal wall. There seems to be much more soft tissue in the mass than would be furnished by a simple prolapsed vaginal wall. The perineum is usually also felt to be much relaxed, and some degree of prolapse of the uterus is present as a rule. There may be a concomitant rectocele (see below).

Chief Signs.—Usually a history of childbirth with perineal laceration; bearing-down sensation; frequent, painful urination; may be consciousness of a protruding mass; passage of a steel urethral bougie.

Rectocele (*Prolapse of the Anterior Wall of the Rectum*).—*Characteristics.*—The posterior wall of the vagina is seen and felt to bulge outward. A finger passed into the rectum shows that its anterior wall goes into this sac. Straining increases its size. The perineum is usually relaxed, the uterus somewhat prolapsed, and there may also be cystocele.

Chief Signs.—History of childbirth with perineal laceration; difficult defecation; consciousness of protrusion; symptoms of associated prolapse and cystocele.

Laceration of the Perineum (*Relaxed Perineum; Relaxation of the Pelvic Floor*).—*Characteristics.*—On palpation of the perineum with the fingers in the introitus, it is felt to be relaxed and inelastic. There is usually also a cystocele, rectocele, or both. There is some degree of prolapse of the uterus. Inspection confirms the impression given by palpation. The ends of the torn sphincter may be seen as well-marked dimples on each side of the anal orifice in a complete laceration.

Chief Signs.—History of difficult labor with perineal tearing; symptoms referable to the associated prolapse, cystocele and rectocele; hemorrhoids.

Prolapse of the Uterus (*and Procidentia*).—*Characteristics.*—The cervix is felt much lower than normal, or it may be present at the vaginal orifice or even project far outside. The body of the uterus is also felt to be lower than usual. When standing or after straining the prolapse is more marked. The perineum is relaxed and there is usually also rectocele, cystocele, or both.

Chief Signs.—See page 575.

Hypertrophy of the Cervix (*Elongation of the Cervix*).—*Characteristics*.—The cervix is felt much lower than it ought to be, though the uterus is in its normal position.

Chief Signs.—Occurrence between fifteen and thirty-five, oftenest in nulliparæ; dragging sensation in the pelvis; associated retroversion and prolapse; may be protrusion; may be menstrual disturbance and leukorrhea.

Carcinoma of the Cervix Uteri.—*Characteristics*.—The cervix is felt to be increased in size, indurated and ulcerated, and a nodular or cauliflower growth may be palpated which is friable and tends to bleed easily on touch. In the early stages only an indurated spot may be all that can be felt.

Chief Signs.—Irregular vaginal discharge, watery or bloody, later profuse, bloody, purulent and fetid; pain not infrequent, but seldom an early symptom, in the back, sometimes thighs, or remote parts of the pelvis; may be dysuria and vesical tenesmus; histologic examination of exfoliated material or that obtained by biopsy.

Laceration of the Cervix Uteri.—*Characteristics*.—The cervix is felt to be enlarged, notched, and cystic. The lips may be everted.

Chief Signs.—See page 571.

Chronic Endocervicitis.—*Characteristics*.—The finger detects the soft, velvety character of the catarrhal patch, the enlargement and hardness of the vaginal portion of the cervix, and the round shotlike bodies (nabothian cysts) under the surface, giving an irregular feel to the cervix. The external os is patulous.

Chief Signs.—See page 575.

Cervical Polyp.—*Characteristics*.—A small soft mass may be felt projecting from the cervix or obstructing the external os.

Chief Signs.—See page 576.

Pregnancy.—*Characteristics*.—The cervix is soft and patulous and the uterine body is felt to be enlarged and doughy or elastic. The cervix and fundus may seem to be disconnected. Later in pregnancy (after the fourth month) more positive signs are evident, such as ballottement, recognition of the fetal parts, etc.

Chief Signs.—See page 503.

Uterine Fibroids (*Fibromyomata of the Uterus*).—*Characteristics*.—The uterus is enlarged, irregular, and nodular, and there may be movable masses apparently separated from the body of the uterus (pedunculated fibroids). Small tumors may be felt as denser portions of the uterine wall, or as round, smooth, hard nodules in the body of the uterus, making it denser or asymmetrical. Large tumors are mapped out and their relation to the uterus determined by bimanual palpation with a sound passed into the internal cavity to locate the position of the uterus. In fibrous polypi (submucous fibroids) the cervix is generally more or less dilated, admitting the finger, which may detect a firm, rounded tumor connected with the uterine wall; or the tumor may protrude through the cervix.

Chief Signs.—See page 573.

Retrodisplacement of the Uterus (*Retroversion; Retroflexion*).—*Characteristics*.—The uterus is found low in the pelvis, the cervix often pointing forward, and the fundus located posteriorly, *i.e.*, inclined backward. In retroversion the axis of the cervix and fundus are in a straight line; in retroflexion the fundus is bent backward on the cervix, and the fundus may remain in its normal position. The two conditions are usually associated and some degree of decensus always coexists.

Chief Signs.—See page 574.

Anteflexion of the Uterus.—*Characteristics.*—The entire uterus may be mapped out, revealing the forward flexion of the body, which makes a right or acute angle with the cervix, or the deeply invaginated cervix in the axis of the vagina. The uterosacral ligaments may usually be felt as tense, tender bands and the whole uterus may be retroposited in the pelvis.

Chief Signs.—See page 576.

Anteversio of the Uterus.—*Characteristics.*—The fundus is felt to be inclined forward and the cervix pointing backward, with straightening of the uterine axis.

Chief Signs.—Existence of metritis, tumor, or adhesion drawing the fundus forward or the cervix backward; frequent micturition; hypogastric pain; symptoms due to the causative lesion.

Subinvolution of the Uterus.—*Characteristics.*—The uterus is found low in the pelvis and enlarged. It is not particularly tender; there may be retroversion and perineal laceration.

Chief Signs.—See page 574.

Chronic Metritis.—*Characteristics.*—The uterus is felt to be generally enlarged, dense and sensitive, with no alternation in its form. In time the uterus becomes smaller and hard.

Chief Signs.—History of previous inflammation or some condition causing chronic hyperemia; leukorrhea; feeling of weight in the pelvis; menorrhagia and metrorrhagia; dilated cervical canal; “neurasthenia.”

Atrophy of the Uterus.—*Characteristics.*—The uterus is small and hard.

Chief Signs.—Occurrence after the menopause; destruction or removal of the ovaries; exhausting general disease, rarely pregnancy (superinvolution); amenorrhea; sterility; reflex nervous disorders.

Acute Salpingitis.—*Characteristics.*—There is pain and muscular rigidity elicited on compressing the inflamed tube or tubes. The affected tube or tubes are usually found thickened or there is a mass of exudate at the side and frequently behind, rarely in front of the uterus. There is pain on moving the uterus, which may become fixed.

Chief Signs.—History of recent gonorrhea; pain and tenderness in one or both tubo-ovarian regions with muscular rigidity, the pain being increased by movements; fever; vaginal discharge; leukocytosis; may be gonococci in the smear.

Chronic Salpingo-Oöphoritis (*Pus Tube; Pyosalpinx; Chronic Salpingitis*).—*Characteristics.*—There is found tenderness in the tubal region of one or both sides and in most cases a mass in the same region, or perhaps a thickening of the affected tube. If the inflammation is more marked, there is a distinct mass beside the uterus or in the culdesac, fixing the latter to the pelvic wall; or the whole pelvis may be filled with a mass, which forms a wall above the place of the vagina, and the uterus is fixed immovably in this. The exudate is tender when pressed upon. There may be an elongated and “sausage-shaped” fluctuating tumor in the mass (hydrosalpinx).

Chief Signs.—See page 574.

Placenta Prævia.—*Characteristics.*—The cervix is softer and more succulent than usual, and its canal is more or less patulous, so that the finger may often

be carried through the internal os, where the characteristic spongelike placental tissue may be felt between the finger and the presenting part.

Chief Signs.—See page 574.

Acute Septic Endometritis.—*Characteristics.*—The uterus is large, tender and sensitive to motion, and the external os patulous, if there has been a recent abortion, miscarriage, or term labor.

Chief Signs.—See page 570.

Rectovaginal Fistula.—*Characteristics.*—Digital examination reveals a rough place in the posterior vaginal wall. If the opening is small, only a small elevation or depression or a rough place is felt.

Chief Signs.—Escape of feces or flatus by way of the vagina; irritative vaginitis and vulvitis; passage of a probe, or injection of colored water or milk into the rectum.

Vesicovaginal Fistula.—*Characteristics.*—Similar to the above, except that the evidence is found on the anterior vaginal wall.

Chief Signs.—Partial or complete leakage of urine into the vagina; excoriation of the vulva and adjacent skin; passage of a sound into the bladder, or the injection of colored water or sterile milk into the bladder.

Periurethral Abscess.—*Characteristics.*—There is felt a diffuse or circumscribed, tender, indurated swelling of the anterior vaginal wall under the urethra. There may be fluctuation; or pressure may cause pus to flow from the urethra.

Chief Signs.—Pyuria; frequent and painful urination.

Ectopic Pregnancy.—*Characteristics.*—The uterus is enlarged, the cervix soft, and a tumor may be felt beside, behind, or in front of the uterus, displacing it. This mass is tense, fluid, tender, and pulsating. If rupture has occurred, signs of pelvic hematoma or hematocele may be obtained. (See below.)

Chief Signs.—See page 573.

Ovarian Cyst (and Parovarian Cyst).—*Characteristics.*—In small ovarian cysts there is felt a fluid, not tender unless inflamed or twisted, spherical tumor situated in the lateral part of the pelvis, and which is usually freely movable. It is attached to the lateral part of the pelvis, apparently arising from the tubo-ovarian region. A large cyst causes abdominal distention and fluctuation (see page 504).

Chief Signs.—Symptoms of pressure if large (bladder, rectum, etc.); may be amenorrhea or menorrhagia.

Chronic Oöphoritis.—*Characteristics.*—The ovary is felt to be tender and enlarged, also knobby if cystic. Atrophic ovaries are usually not palpable.

Chief Signs.—Pain in one or both ovarian regions; dyschesia; dysmenorrhea; dyspareunia; may be menorrhagia and metrorrhagia.

Chronic Pelvic Cellulitis (Parametritis).—*Characteristics.*—Examination reveals induration of extreme hardness low in the pelvis and closely attached to the sides of the cervix. This may extend out to the pelvic wall and may be so intimately attached to the bone and so hard as to appear to be a bony or cartilaginous outgrowth from the wall of the pelvis. There is usually tenderness.

Chief Signs.—History of previous acute pelvic infection: leukorrhea; dysmenorrhea; backache; local pain, increased by standing and walking, relieved by lying down.

Tuberculous Salpingitis.—*Characteristics.*—The condition encountered is very

similar to that described for ordinary gonorrheal salpingo-oöphoritis. If tuberculous peritonitis also exists hard masses are felt and there may be ascites.

Chief Signs.—Occurrence without previous acute inflammation in a young woman or girl; progressive course; emaciation; presence of tuberculosis elsewhere; tuberculin test.

Pelvic Abscess.—*Characteristics.*—A fluctuating mass is felt in the lower pelvis, surrounded by an induration. This mass is very tender at the point of fluctuation.

Chief Signs.—Those of salpingitis.

Pelvic Hematocele or Hematoma.—*Characteristics.*—There is a boggy, fluid mass behind the uterus, pushing it forward (hematocele), or a firm, rounded mass pushing the uterus to the opposite side and seeming to blend with it (hematoma).

Chief Signs.—History suggesting recently ruptured tubal pregnancy.

Appendicitis.—*Characteristics.*—A mass may be felt in the appendix region or even in the right tubo-ovarian region, if there is exudation or an abscess.

Chief Signs.—See page 512.

Fecal Impaction.—*Characteristics.*—Irregular, puttylike masses may be felt pushing up into the posterior vaginal wall or in the region of the culdesac.

Chief Signs.—See page 478.

Less Common Causes.—Tumor or cyst of the vagina; vaginal hernia; inversion of the uterus; tumor of the rectum; tumor of the bladder; submucous fibroid (projecting through the cervix); congenital atrophy of the uterus; infantile uterus; uterus septus; uterus bicornis; uterus didelphys; uterus unicornus; uterus bipartitus; adhesive vaginitis; atresia of the vagina (complete closure); stenosis of the vagina (incomplete closure); double vagina; vaginal fistula (if large); vaginismus; sarcoma of the uterus; chorio-epithelioma; hyperinvolution of the uterus; ovarian tumor; intussusception; tumor of the cecum; dislocated kidney; psoas abscess; tumor of the round ligament; varicocele or tumor of the broad ligament; tuberculous peritonitis; distended bladder; cyst of the urachus; tumor of the fallopian tubes; prolapse of the ovary; ovarian hydrocele; hematoma of the ovary; neoplasm of the urethra; urethrocele; suburethral abscess; vesical calculus.

ABNORMALITIES NOTED BY SPECULUM EXAMINATION

Simple Vaginitis (*Catarrhal Vaginitis*).—*Characteristics.*—The vaginal walls are red and hot, the mucous membrane is swollen and sensitive, and bathed in a purulent discharge. In chronic cases the cellular infiltration and epithelial exfoliation persist and the walls are granular.

Chief Signs.—A feeling of heat and pain; slight fever; discharge; absence of gonococci in the smear; if chronic, merely vulvar irritation and ichorous discharge.

Gonorrheal Vulvovaginitis.—*Characteristics.*—The vulva and vagina are red, hot, and tender, and bathed in a yellow purulent secretion.

Chief Signs.—History of suspicious coitus a few days previous; acute, severe onset; involvement of the urethra and vulvovaginal glands; burning sensation; frequent, painful urination; gonococci in the discharge.

Adhesive Vaginitis (*Senile Vaginitis*).—*Characteristics.*—The mucous mem-

brane is smooth, having lost its rugæ; ecchymotic spots and superficial ulceration are seen scattered over the mucous surface, which is moistened with a scanty serous secretion. Adhesions are felt to be broken as the speculum is inserted.

Chief Signs.—Occurrence usually after the menopause; thin, serous discharge, stained with blood; burning sensation or feeling of weight in the pelvis; may be pruritus.

Simple Ulcer of the Vagina.—*Characteristics.*—There is an area of erosion, which is sensitive and bleeds easily, and has a granulating surface.

Chancroid of the Vagina.—*Characteristics.*—The ulcer has an irregular, ragged base with punched-out or undermined edges, and is soft and painful, with an irritative discharge, frequently blood-streaked. There may be several sores.

Chief Signs.—History of intercourse twenty-four to forty-eight hours previous; symptoms of vaginitis; a tender lump in the groin; biopsy (Ducrey's bacillus); exclusion of syphilis.

Chancre of the Vagina.—*Characteristics.*—An ulcer with an indurated base and sloping edges is seen.

Chief Signs.—History of suspicious coitus two to three weeks previous; absence of pain; enlargement of the inguinal glands; dark-field examination (spirochetes); Wassermann (may or may not be positive).

Tuberculosis of the Vagina.—*Characteristics.*—A number of small ulcers are present, usually in the posterior vaginal fornix, which tend to coalesce and form ulcers of various sizes. They have a punched-out appearance, the edges being perpendicular, and the base is yellowish-gray and may show many miliary tubercles. There is a surrounding hyperemic zone containing many miliary tubercles.

Chief Signs.—Evidence of tuberculosis of the tubes and uterus; discharge and irritation; may be tubercle bacilli in the discharge; guinea-pig inoculation; biopsy.

Carcinoma of the Vagina.—*Characteristics.*—There is either a broad-based excrescence upon the posterior wall of the vagina, which first invades the fornix and then extends downward toward the vulva; or there is a nodular ulcerating growth, which may be localized about the wall of the urethra.

Chief Signs.—Usually evidence of malignancy also of the uterus, rectum, bladder, or external genitalia; biopsy.

Vaginismus.—*Characteristics.*—The vagina contracts spasmodically, preventing the introduction of the speculum.

Chief Signs.—May or may not be presence of a painful affection of the genitalia; nervousness, fear, or shame.

Pregnancy.—*Characteristics.*—The margins of the vaginal opening and the lower portion of the anterior vaginal wall frequently take on a somewhat dark bluish or purplish, congested appearance.

Chief Signs.—See page 503.

Laceration of the Cervix.—*Characteristics.*—The cervix is seen to be notched, enlarged, cystic, and the mucous membrane everted and eroded. There may be a tenaceous mucopurulent secretion coming from the cervical canal.

Chief Signs.—See page 571.

Ulcer of the Cervix.—*Characteristics.*—An ulcer is easily detected. It may be large or small, superficial or deep, and often bleeds when touched. The ulcer

may be simple, chancroidal, syphilitic, tuberculous, or malignant (see above, the various ulcers of the vagina).

Rectovaginal Fistula.—*Characteristics.*—The opening in the posterior vaginal wall, if large, may be seen; but if small, only a rough place with a small slit is visible. Very often a red papule marks the vaginal opening of the fistula. The passage of a probe with one finger in the rectum shows the communication. Injection of colored water or milk into the rectum is followed by its appearance on the posterior vaginal wall.

Chief Signs.—See page 585.

Vesicovaginal Fistula.—*Characteristics.*—Similar to the above except that the slit or papule is located on the anterior vaginal wall. Exploration of the opening with a probe, with a sound in the bladder, shows that the sinus communicates with the bladder. Sterile methylene-blue solution or sterile milk when injected into the bladder may be seen to escape through the vaginal opening.

Chief Signs.—See page 585.

Cervical Polyp.—*Characteristics.*—The polypus (when low enough in the canal) is seen as a small rounded red mass, projecting from the external os or filling the os.

Chief Signs.—See page 576.

Acute and Chronic Endometritis.—*Characteristics.*—A mucopurulent discharge is seen coming from the uterus.

Chief Signs.—See pages 570, 571.

Acute Endocervicitis.—*Characteristics.*—A tenaceous and stringy discharge comes from the cervix. There is usually considerable erosion about the external os and hyperemia of the cervix, which bleeds easily.

Chief Signs.—History of coitus a few days previous; a sensation of weight and discomfort in the pelvis; acute onset; vaginal discharge; may be vulvitis, urethritis, Bartholinitis; gonococci in the smear.

Chronic Endocervicitis.—*Characteristics.*—The cervix is enlarged, congested, and the mucosa everted and granular (small retention cysts). A tenaceous stringy discharge is seen coming from the cervix.

Chief Signs.—See page 575.

Carcinoma of the Cervix.—*Characteristics.*—The affected cervical lip is nodular and indurated. The nodules are glazed and bluish-white. The mucosa may be unbroken or eroded, and bleeds slightly upon examination. Later a rapidly developing growth of wartlike vegetations may almost conceal the cervix. It is made up of delicate papillæ which are extremely friable and bleed easily. Ultimately the cauliflower growth breaks down and tissue necrosis takes place; the cervix is replaced by a deep, ragged excavation, and the vagina becomes invaded.

Chief Signs.—See page 583.

Hypertrophy of the Cervix (Elongation).—*Characteristics.*—With the patient in the knee-chest position, the cervix is seen protruding deeply into the vagina, notwithstanding the fact that the entire uterus is carried up into the pelvis when the vagina becomes distended with air. The cervix is elongated and conical.

Chief Signs.—See page 583.

Prolapse of the Uterus.—*Characteristics.*—The cervix is low in the pelvis and in the axis of the vagina, and may be made to descend lower by having the patient

cough or strain. The cervix is enlarged and edematous and not conical. The dome of the vagina is obliterated. There is also perineal relaxation and cystocele or rectocele.

Chief Signs.—See page 575.

Less Common Causes.—*Trichomonas vaginalis*; aphthous vaginitis; diphtheritic vaginitis; emphysematous vaginitis; exfoliative vaginitis; cysts and tumors of the vagina; tertiary syphilitic ulcer of the vagina; carcinoma of the vagina; ureterovaginal fistula; chorio-epithelioma of the vagina.

DYSPAREUNIA

(See also "Impotence," page 727.)

Difficult or painful coitus may depend on a variety of local lesions or may exist when no local cause can be found. It is usually associated with vaginismus or painful spasm of the levator ani muscle on attempts at coitus. In some cases no organic or painful lesion can be located; these cases are usually termed "neurotic," and may be due to psychic causes (oversensitiveness, abhorrence of the male, etc.). The small abrasions that accompany rupture of the hymen at the first intercourse may become inflamed after a day or two, making subsequent coitus painful until healing has occurred.

Imperforate Hymen.—*Characteristics.*—The difficulty is naturally entirely mechanical.

Chief Signs.—History of amenorrhea with evidence of retained menstrual blood (hematocolpos); inspection, revealing the condition.

Organic Stenosis of the Vaginal Orifice.—*Characteristics.*—Obstructing tissue may prevent introduction of the penis, but will allow the menstrual blood to escape.

Chief Signs.—Evidence of a very strong, firm hymen or some distinct malformation (vaginal septum), or contraction of scar tissue from severe burn or injury or vaginitis.

Inflamed Hymeneal Orifice.—*Characteristics.*—The hymeneal tags may be supersensitive from previous inflammation, usually gonorrheal.

Chief Signs.—Associated redness and swelling of Bartholin's glands.

Leukoplakic Vulvitis.—*Characteristics.*—Coitus is painful because of the sensitive fissures.

Chief Signs.—White, sodden, cracked appearance of the labia minora.

Kraurosis Vulvæ.—*Characteristics.*—Attempted coitus is painful, or even impossible due to actual contraction.

Chief Signs.—See page 581.

Ulcers of the Vulva.—*Characteristics.*—These may be very painful.

For causes of Ulcers of the Vulva, see page 579.

Gonorrhea.—*Characteristics.*—The urethritis and vaginitis of acute gonorrhea frequently cause pain on attempted coitus.

Chief Signs.—See page 570.

Urethral Caruncle.—*Characteristics.*—This condition may be extremely painful on attempted coitus. Hemorrhage may result.

Chief Signs.—Pain on urination; frequent urination; presence of a small papillary growth in the urethral orifice.

Pudic Neuritis.—*Characteristics.*—Though no local lesion can be found, there may be extreme tenderness along the course of the pudic nerve just inside the vaginal orifice.

Salpingo-Oöphoritis.—*Characteristics.*—There may be no pain on penetration and no difficulty, but coitus causes acute pain. This applies to all inflammatory lesions around the uterus. The pain is caused by the impact of the male organ or by sexual congestion.

Chief Signs.—See page 574.

Chronic Endometritis.—*Characteristics.*—The acute congestion of the enlarged tender uterus incident to coitus causes pain.

Chief Signs.—See page 573.

Retrodisplacement of the Uterus.—*Characteristics.*—Ordinarily there is no pain on coitus, but if inflammation appears, dyspareunia is often marked.

Chief Signs.—See page 574.

Cystitis.—*Characteristics.*—The bladder is painful and intolerant of the disturbance caused by coitus.

Chief Signs.—See page 556.

Fissure in Ano.—*Characteristics.*—Coitus is painful. The cause may be difficult to locate.

Chief Signs.—See page 591.

Hemorrhoids.—*Characteristics.*—Inflamed or thrombotic piles make coitus painful.

Chief Signs.—See page 591.

Less Common Causes.—Coccygodynia; adhesive oöphoritis; prolapsed ovary; perineal laceration; atresia of the vagina.

THE ANOPERINEAL REGION

SYMPTOMS	PAGE
Pain in the Rectum (Including Rectal Tenesmus and Pain on Defecation)	591
Pain in the Perineum	594
Tenderness in the Perineum	595
Ulcers of the Perineum	595
Pruritus Ani	596
Swelling in the Anoperineal Region	597
Abnormalities Felt per Rectum	597

See also "Stools, Blood in," page 803; "Stools, Mucus in," page 806; and "Stools, Pus in," page 808.

PAIN IN THE RECTUM

(Including Rectal Tenesmus and Pain on Defecation)

Ischiorectal Abscess (Acute).—*Characteristics.*—Throbbing pain is present, intensified by walking, sitting, coughing, and defecation.

Chief Signs.—Hot, red, tender, brawny, and edematous induration between the anus and the ischial tuberosity; rectal palpation, revealing a tender elastic swelling in the ischiorectal space.

Fissure in Ano (Irritable Ulcer).—*Characteristics.*—There is sharp, acute, pricking or smarting pain during defecation; it may be severe, burning, and lancinating, followed by throbbing and spasm.

Chief Signs.—Tapelike stools; and exploration, revealing an ulcer in a fold of the anus; spasmodic contraction of the sphincter; may be hardened feces streaked with pus or blood.

Ulcer of the Rectum (Simple, Syphilitic, Tuberculous, Malignant, Dysenteric, Typhoidal).—*Characteristics.*—The pain varies greatly, but is a prominent symptom in an ulceration situated low enough to be grasped by the sphincter. Tenesmus, spasm of the sphincter muscle, and pain on defecation may be present.

Chief Signs.—Diarrhea, especially on arising (often with tenesmus); discharge of mucus, pus, or blood; history or evidence of the cause; proctoscopy, revealing the ulcerations, which may be characteristic.

Hemorrhoids.—*Characteristics.*—Internal hemorrhoids cause pain and a sense of fullness; when inflamed they become intensely painful. External hemorrhoids cause little pain unless they become inflamed, strangulated, or thrombotic.

Chief Signs.—Pedicled purplish swellings within or without the anus covered by mucous membrane or skin, in the center of which are one or more dilated veins.

Anal Abscess.—*Characteristics.*—Throbbing pain is present, worse on defecation and walking.

Chief Signs.—Itching and small localized abscess (furuncle).

Proctitis (Specific or Non-Specific).—*Characteristics.*—Pain or a sensation of heat and fullness occurs, accompanied by tenesmus.

Chief Signs.—Frequent defecation; small feces with mucus, pus, or blood; proctoscopic examination (red, swollen mucous membrane of the rectum); palpation, revealing heat and tenderness in the rectum.

Fistula in Ano.—*Characteristics.*—Pain is present only during defecation, or when the fistula closes and becomes distended with pus.

Chief Signs.—Moisture about the anus; itching and irritation; discharge of pus on defecation with relief (internal fistula); local exploration with a probe; proctoscopy.

Stenosis or Stricture of the Rectum (Inflammatory or Malignant).—*Characteristics.*—Pain is present if there is ulceration, when it may be constant and intensified by defecation.

Chief Signs.—Rectal discharge of mucus, pus, or blood; constipation; deformity of the stools; may be attacks of diarrhea (morning); digital and proctoscopic examinations, revealing the contracted area and ulceration.

Carcinoma of the Rectum.—*Characteristics.*—Pain is usually late; there may merely be a sense of fullness and tenesmus.

Chief Signs.—Middle life; passing of pus, blood, or mucus per rectum; cachexia; proctoscopy (revealing nodules or ulcerations); later signs of stricture; may be secondary fistula into the bladder, rectum, or externally; biopsy.

Rectal Polypus or Adenoma.—*Characteristics.*—Constant desire to stool, prolonged straining and unrelieved sensation following defecation are often present.

Chief Signs.—Marked weight and fullness in the bowel; sacrococcygeal neuralgia; pain referred down the limbs; frequent micturition; diarrhea; tympanites; digestive disturbances; offensive discharge if the neoplasm has degenerated; finger palpation and proctoscopic examination, revealing a pedunculated growth; biopsy.

Periproctitis.—*Characteristics.*—There are tenesmus, constant painful straining, and unsatisfactory evacuation.

Chief Signs.—History or evidence of rectal disease or injury; local examination, revealing painful, brawny swelling and inflammation about the lower rectum; may be sloughing in the aged or asthenic.

Perirectal Abscess.—*Characteristics.*—Defecation is painful.

Chief Signs.—History or evidence of disease of the urethra, bladder, prostate, or female pelvic organs, or of a psoas or appendiceal abscess; signs of sepsis; palpation, disclosing a painful bulging above the level of the internal sphincter.

Rectal Papillitis and Cryptitis.—*Characteristics.*—Sharp lancinating pain occurring during defecation is the most prominent symptom of the condition. Later on it becomes dull and throbbing. Spasm of the sphincter may occur.

Chief Signs.—Constipation; abdominal discomfort; proctoscopy, revealing hypertrophied papillæ and inflamed crypts in the region of the internal sphincter.

Submucous Abscess.—*Characteristics.*—Throbbing pain in the rectum is present, increased by defecation and walking.

Chief Signs.—Digital palpation, revealing a very tender, elongated, elastic, smooth swelling in the rectal wall.

Seminal Vesiculitis (Usually with Prostatitis).—*Characteristics.*—There is pain high in the rectum on micturition, defecation, erection, or ejaculation, or colicky pain occurring spontaneously at night.

Chief Signs.—History of infection; priapism; may be bloody ejaculations; rectal palpation, disclosing enlarged and tender vesicles; examination of the expressed discharge (pus).

Prostatic Abscess.—*Characteristics.*—Defecation is both painful and difficult if the abscess is large. There is a constant dull or throbbing ache inside the pelvis which may radiate.

Chief Signs.—Antecedent urethral discharge; fever; painful micturition; swollen, dusky perineum; urinary retention; softening and fluctuation on palpation through the rectum.

Acute Ileocolitis (Enterocolitis; Acute Catarrhal Enteritis).—*Characteristics.*—Tenesmus may be severe and preceded by pain when the colon is inflamed right down to the anus.

Chief Signs.—See page 491.

Acute Dysentery.—*Characteristics.*—There is repeated urgent desire to defecate with painful straining without evacuation beyond a little fluid with mucus or blood (the bowel having been previously emptied by the preliminary diarrhea).

Chief Signs.—See page 464.

Mucomembranous Colitis.—*Characteristics.*—Severe tenesmus may occur with the passage of the membranes.

Chief Signs.—See page 464.

Food Poisoning (*Including "Ptomaine Poisoning"*).—*Characteristics.*—Tenesmus is associated with abdominal pain.

Chief Signs.—Occurrence of simultaneous cases in the household or assembly of individuals; sudden onset after eating a particular food, following a latent period of from three to thirty hours; diarrhea; nausea, and usually vomiting; headache and cold sweats; often shivering and syncope; bacteriological examination of the stools; serum tests with recognized strains (*Bacillus enteritidis* Gaertner).

Arsenic Poisoning (*Criminal or Medicinal*).—*Characteristics.*—Acute tenesmus may be a marked feature in some cases.

Chief Signs.—History of taking an overdose or of taking the drug over a long period therapeutically, as in chorea or pernicious anemia; vomiting and collapse, followed by diarrhea.

Fecal Impaction (*Scybala*).—*Characteristics.*—The mass produces a sensation of weight and fullness in the rectum with frequent and prolonged straining and bearing-down pain as in labor. The pain is not confined to the anal region, being frequently reflected to the abdomen, back, neighboring organs, and down to the testicle.

Chief Signs.—Constipation alternating with diarrhea; rectal palpation, revealing scybalous masses; relief after copious enemata.

Acute Salpingitis.—*Characteristics.*—Rectal pain intensified at stool may occur.

Chief Signs.—See page 584.

Intussusception.—*Characteristics.*—There is usually tenesmus, which is more severe and frequent the nearer the intussusception is to the anus, accompanied by the passage of mucus and blood, the passages becoming particularly offensive when sloughing occurs.

Chief Signs.—See page 511.

Foreign Body in the Rectum.—*Characteristics.*—There is tenesmus accompanied by the passage of blood and mucus (owing to ulceration); large bodies may cause bladder irritation or shooting pains in the lower extremities.

Chief Signs.—History of swallowed or introduced foreign body; palpation or inspection intrarectum, revealing the foreign body; x-ray.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—Rectal crises may occur. There is urgent and very painful recurring desire to defecate without material evacuation, occurring usually in the morning, lasting two or three hours and followed by relief until the next day, when the crises may recur.

Chief Signs.—See page 604.

Less Common Causes.—Vesical calculus; Asiatic cholera; coccygodynia; chronic intussusception (in adults); condylomata; poisoning from cantharides, calomel, colocynth, gamboge, and powerful purgatives; intestinal worms; rectal concretions (hair, bismuth, magnesium, chalk, charcoal); fibroma uteri; ovarian cyst; ectopic pregnancy; pelvic peritonitis; pelvic cellulitis; retroversion of the uterus; pelvic hematocele; prolapsus ani; prostatitis (acute or chronic); *Bilharzia* (rectal); volvulus; carcinoma of the uterus; cystitis; sacro-iliac disease.

PAIN IN THE PERINEUM

This symptom is often mentioned by patients in giving a history of some affection of the genito-urinary apparatus or of other organs, but usually as a dull aching, to which little notice is given. The other symptoms are usually more striking and of more diagnostic importance.

Prostatitis (*Usually with Posterior Urethritis*).—*Characteristics.*—The perineal pain is usually mild but real, may or may not be influenced by urination, is often accompanied by a peculiar sense of fullness in the perineal body or with a peculiar irritability in that region excited by continued pressure against the perineum; the patient usually sits obliquely on one hip owing to discomfort in the sitting posture.

Chief Signs.—See page 556.

Vesical Calculus.—*Characteristics.*—Pain is referred to the perineum as well as to the glans penis and pendulous urethra, and is induced by jolting or jarring movements of the body.

Chief Signs.—See page 556.

Acute Cystitis.—*Characteristics.*—Pain is present in the perineum and hypogastrium and more marked at the end of urination.

Chief Signs.—See page 556.

Acute Vaginitis.—*Characteristics.*—Acute throbbing pain in the perineum may be present.

Chief Signs.—Heat and pain in the vagina with a feeling of fullness in the pelvis; purulent vaginal discharge; painful and frequent urination if gonorrheal; speculum examination; examination of a smear (pus and often gonococci).

Perineal Trauma.—*Characteristics.*—Pain is present with swelling and discoloration following an injury.

Periurethral Abscess, Perineal Portion (*Abscess of Cowper's Gland*).—*Characteristics.*—Pain and tenderness are present in the perineum.

Chief Signs.—History of acute urethritis; appearance of an inflammatory mass often to one side of the median line; extensive perineal infiltration if the abscess is not incised.

Condylomata Lata.—*Characteristics.*—Pain and tenderness are present if the warts are ulcerated.

Chief Signs.—See below.

Less Common Causes.—Prostatic abscess; tuberculosis of the prostate; prostatic calculus; adenomatous prostate; carcinoma of the prostate; seminal vesiculitis; tuberculosis of the seminal vesicles; tuberculosis of the bladder; injury and rupture of the urethra; urethral calculus (impacted in the bulbous portion);

congenital misplacement of the testicle in the perineum; eczema; intertrigo; chronic vaginitis; bartholinitis; cystocele; epithelioma of the vagina.

TENDERNESS IN THE PERINEUM

Ischiorectal Abscess.—*Characteristics.*—There is a very tender inflammatory swelling between the anus and the ischial tuberosity.

Chief Signs.—See page 591.

Prostatic Abscess.—*Characteristics.*—The perineum is tender, and there is a sensation of heat, pain, and weight referred to that region.

Chief Signs.—See below.

Hemorrhoids.—*Characteristics.*—When the hemorrhoids become inflamed there is perineal tenderness.

Chief Signs.—See page 591.

Urinary Infiltration (*Periurethral Phlegmon or Gangrene*).—*Characteristics.*—The first sign is a tender edematous swelling in the median line of the perineum, which rapidly increases in size and spreads superficially in every direction.

Chief Signs.—History of stricture; shock, sepsis; marked perineal edema with many foci of suppuration and urinary fistula.

Less Common Causes.—Proctitis; carcinoma of the prostate; prostatitis.

ULCERS OF THE PERINEUM

Local Infection (*Traumatic Ulcer, Folliculitis, and Sebaceous Cyst*).—*Characteristics.*—There is a superficial ulceration near the center or to one side of the perineum, movable on the deeper parts and showing no tract into which a probe can be inserted.

Condylomata Lata.—*Characteristics.*—There are oval or rounded, flat-topped sessile masses extending from the anus or vulva, and often ulcerated on the surface.

Chief Signs.—Accompanying signs of syphilis; positive Wassermann; dark-field examination (spirochetes).

Periurethral Abscess.—*Characteristics.*—A number of small ulcers or fistulæ are present in the perineum, which discharge urine during micturition or continuously.

Chief Signs.—History of acute urethritis or evidence of stricture; presence of fistulous tracts (probing).

Prostatic Abscess.—*Characteristics.*—An abscess of the prostate sometimes discharges into the perineum, leaving a permanent sinus.

Chief Signs.—History of recent gonorrhea; chills and fever; pain and frequency of urination; constant dull or throbbing pelvic ache which may radiate; painful or difficult defecation; retention of urine; rectal palpation of an enlarged, sensitive, fluctuating prostate; passage of a probe along the sinus.

Chancroids.—*Characteristics.*—Multiple, soft, shallow, painful, inflamed ulcers may be present in the perineal region and are usually reimplantations of others on the genitals.

Chief Signs.—See page 558.

Tuberculosis.—*Characteristics.*—Perineal tuberculous ulcers coalesce to form

large, irregular, livid, sensitive lesions having sharply defined edges that droop inward, remain superficial, or attack deeper structures in and about the anus.

Chief Signs.—Chronicity; presence or history of pulmonary or intestinal tuberculosis; finding of the tubercle bacilli in removed tissues or the discharge.

Less Common Causes.—Chancre; epithelioma (extending from the vulva or anus); prostatic tuberculosis (perineal fistula); gonorrhea (in women).

PRURITUS ANI

The establishment of the etiological factor is often obscure, though the condition may be very distressing and cause great debility. The diseases listed below are often associated with this symptom and should be considered first. If these can all be excluded many vague possibilities may be thought of but are of no practical importance in the treatment. Pruritus has been attributed to a host of general conditions, among which are gout, diabetes, nephritis, jaundice, constipation, digestive disorders, mental and nervous affections, and the opium, alcohol, tea, and tobacco habits. Irritative pruritus ani is occasionally traceable to uncleanness, discharge from neighboring parts, irritating substances locally applied, and prolonged pressure. Troublesome itching sometimes follows operations upon the rectum, particularly the Whitehead operation. It may be one of the symptoms of the degenerative processes which occur in senility; and itching may be a reflex manifestation of diseases of the prostate, urethra, bladder, vagina, uterus, and ovaries.

Pin-Worms (*Oxyuris Vermicularis*).—**Characteristics.**—Itching of the anus is the principal symptom and usually comes on about the same hour at night, generally soon after the patient has retired; it is often intense and almost intolerable.

Chief Signs.—Discovery of the *Oxyuris vermicularis* located in the cutaneous folds of the anus.

Hemorrhoids.—**Characteristics.**—Itching is a frequent complaint, may be almost intolerable, and may be the chief and only symptom.

Chief Signs.—See page 591.

Papillitis and Cryptitis.—**Characteristics.**—There is itching at the anus not relieved by scratching. Intolerable itching may occur when a fecalith or foreign body is lodged in a crypt. The itching is aggravated by defecation but is quickly arrested by swabbing.

Chief Signs.—See page 592.

Eczema Ani.—**Characteristics.**—Intense itching is sometimes present.

Chief Signs.—Redness, thickening, and infiltration of the skin with scaling or crusting; sticky exudation; fissures.

Ulcer of the Rectum.—**Characteristics.**—Pruritus is frequently a distressing symptom caused by the galling secretion or by retention of substances in the ulcer by sphincter contraction.

Chief Signs.—See page 591.

Less Common Causes.—*Ascaris lumbricoides* or *Tænia* infection; *Strongyloides*; fissure in ano; proctitis; pediculosis pubis; fistula in ano; herpes; fecalith; foreign body in the rectum; urticaria; scabies; ringworm; neurodermatitis (nodular prurigo); erythema.

SWELLING IN THE ANOPERINEAL REGION

Ischiorectal Abscess.—*Characteristics.*—There is a hot, red, tender, brawny, and edematous induration between the anus and the ischial tuberosity.

Chief Signs.—See page 591.

Anal Abscess.—*Characteristics.*—A small, superficial, localized abscess is present on the anal margin.

Chief Signs.—See page 591.

Fistula in Ano.—*Characteristics.*—More or less swelling, induration, and tenderness are present in the region of the anus, more marked when the fistula has no external opening, or having one, drains imperfectly.

Chief Signs.—See page 591.

Condylomata Lata.—*Characteristics.*—Pinkish wartlike tumors showing a tendency to coalesce and form cauliflowerlike excrescences are present, highly auto-inoculable and giving off a copious discharge with a disgusting odor.

Chief Signs.—Presence of syphilis.

Condylomata Acuminata (Venereal Warts; Papillomata).—*Characteristics.*—Small pedicled papillomatous tumors or warts occur about the anus complicating an irritating discharge in that region. They may be scattered or grouped in long patches or masses.

Chief Signs.—Presence of an irritating discharge from gonorrhea, leukorrhea, chancroid, and other rectal affections; exclusion of syphilis.

External Hemorrhoids.—*Characteristics.*—Small, rounded, purplish tumors protrude from the margin of the anus, hard or soft according to the state of the blood within them. External tabs of skin may be present as the result of former acute hemorrhoids.

Prolapsus Ani.—*Characteristics.*—A reducible, red or purplish cuff protrudes from the anus after defecation or straining. In complete prolapse the mass may be of a large size, irreducible, and ulcerated or even strangulated.

Chief Signs.—Usually a history of excessive straining at stool; may be tenesmus; may be bleeding.

Urinary Infiltration (Periurethral Phlegmon; Gangrene).—*Characteristics.*—There is marked edematous swelling of the perineum with many foci of suppuration and fistulæ discharging urine.

Chief Signs.—See page 595.

ABNORMALITIES FELT PER RECTUM

Digital exploration of the rectum is an important part of a general, pelvic, or simple rectal examination. It may reveal an abnormal condition within or without the rectum. Examination with the proctoscope or sigmoidoscope may be necessary to complete the study. Most diseases of the rectum are located within two inches of the anus. The best position for male patients is the knee-elbow position, for female subjects the right lateral position with the knee flexed and the right arm behind the back.

Internal Hemorrhoids.—*Characteristics.*—Small rounded projections may be

felt just inside the anus and can be brought out through the anus with the finger. They are more easily felt if chronically inflamed, thrombotic, or gangrenous.

Chief Signs.—Pain; pruritus ani; bleeding; proctoscopy (revealing the swellings and excluding carcinoma as the cause).

Rectal Polypus.—*Characteristics.*—One or more soft pedicled growths may be felt with the finger. They are freely movable and may be mistaken for small masses of feces. They may project externally.

Chief Signs.—Rectal irritation; passage of blood and mucus; pain if inflamed; proctoscopy.

Carcinoma of the Rectum.—*Characteristics.*—A hard, nodular, fixed growth is felt, more or less elevated above the level of the mucous membrane, and usually within four inches of the anus. It extends partly or wholly about the rectum and may cause stenosis. The mass is friable, ulcerated, and bleeds easily.

Chief Signs.—See page 592.

Submucous Abscess.—*Characteristics.*—A more or less elongated, smooth, elastic, very tender swelling is felt in the rectal wall. Pressure may rupture the abscess. After the abscess is empty, it feels like a small bean in the submucous tissue.

Chief Signs.—See page 592.

Stricture of the Rectum (*Inflammatory or Malignant*).—*Characteristics.*—An annular or tubular obstruction is met with by the finger at the anus, above the border of the internal sphincter, or three or four inches up the rectum. If fibrous (due to scarring of an old ulceration), it may be a cordlike constriction; if malignant, the hard nodular growth is felt.

Chief Signs.—See page 591.

Ulcer of the Rectum (*Simple, Syphilitic, Tuberculous, Malignant, Dysenteric, etc.*).—*Characteristics.*—Superficial and deep ulcerations may be detected by the finger, but usually only after experience. Inspection is much more reliable. Little information can be gained about the nature of the ulceration by palpation, except the malignant, which has a hard, nodular fixed base in the rectal wall, and is craterlike.

Chief Signs.—See page 591.

Rectovaginal Fistula.—*Characteristics.*—The opening if large may be entered by the finger in the rectum; if small, it feels like a shallow pit or depression.

Chief Signs.—Escape of feces and flatus into the vagina; passage of a probe or the injection of milk into the rectum while inspecting the vagina.

Fecal Impaction.—*Characteristics.*—The hard, movable, irregular mass or masses are easily felt, if lodged above the sphincter.

Chief Signs.—See page 593.

Foreign Body in the Rectum.—*Characteristics.*—Foreign bodies, whether swallowed accidentally or inserted voluntarily through the anus, may be felt if they have lodged in the rectum.

Chief Signs.—See page 593.

Perirectal Abscess.—*Characteristics.*—The abscess may be felt bulging into the rectum above the internal sphincter.

Chief Signs.—See page 592.

Prostatic Hypertrophy (*Prostatism*).—*Characteristics.*—This condition can

almost always be demonstrated by rectal palpation. The finger encounters a rounded, dense mass, smooth and usually symmetrical. The median fissure between the lobes may be deepened or obliterated. One or both lobes may be unduly prominent. If only the median lobe is enlarged or if the prostate is sclerotic, rectal examination reveals no positive evidence of enlargement.

Chief Signs.—See page 556.

Carcinoma of the Prostate.—*Characteristics.*—The prostate presents a stony hardness, with one or more hard nodules, one of which is usually at the very apex of the gland. Palpation with a sound in the urethra brings this out more clearly. A hard ridge is felt above the upper edge of the gland extending outward and ensheathing one or both seminal vesicles in a solid mass.

Chief Signs.—See page 557.

Prostatic Abscess (*Acute Prostatitis*).—*Characteristics.*—The prostate feels hot, swollen, and tender, and if suppuration is extensive the gland feels boggy or fluctuating.

Chief Signs.—See page 592.

Tuberculosis of the Prostate.—*Characteristics.*—The prostate gland may be swollen and nodular, but not characteristically so, the diagnosis being made from the association of known tuberculosis in the epididymis, bladder, or seminal vesicles.

Chief Signs.—See page 557.

Chronic Prostatitis with Posterior Urethritis (*Gonorrheal*).—*Characteristics.*—The prostate may be enlarged and irregular.

Chief Signs.—Usually a history of gonorrhea; urethral discharge of thin milky fluid containing prostatic casts, expressed on defecation or by massage; pain on urination and defecation; reflex pain (back, perineum, urethra); disturbances of sexual function; shreds in the urine; may be gleet.

Seminal Vesiculitis (*Gonorrheal; Always Associated with Chronic Prostatitis*).—*Characteristics.*—There may be some enlargement, hardness and tenderness of the seminal vesicles. The normal seminal vesicles are not palpable.

Chief Signs.—History of gonorrhea; gleet; neuralgic pain in the testicle or rectum; frequent urination; recurring epididymitis; sexual disturbances; may be rheumatism.

Tuberculosis of the Seminal Vesicles.—*Characteristics.*—Typical hard, nodular areas may be encountered; more often the organ is merely dilated in a manner suggestive of simple inflammation.

Chief Signs.—Signs of tuberculosis in the epididymis, bladder, prostate.

Ischiorectal Abscess.—*Characteristics.*—A tender elastic swelling is felt on the side corresponding to the abscess.

Chief Signs.—See page 591.

Retroversion of the Uterus.—*Characteristics.*—The fundus uteri is found projecting posteriorly and encroaching upon the rectum; bimanual examination aids in the diagnosis.

Chief Signs.—See page 575.

Ovarian Cyst.—*Characteristics.*—A fluctuating, cystic, movable mass may be felt per rectum to one side or other of the fundus of the uterus.

Chief Signs.—See page 585.

Salpingitis and Pyosalpinx.—*Characteristics.*—The distended tender tubes or

masses are felt to the side of or behind the uterus, which is usually retroverted and adherent.

Chief Signs.—See page 584.

Ectopic Pregnancy.—*Characteristics.*—A tense, fluid, tender, pulsating mass may be felt beside or behind the fundus of the uterus, which is enlarged; the cervix is soft.

Chief Signs.—See page 573.

Appendiceal Abscess.—*Characteristics.*—An enlarged pelvic appendix or an appendiceal abscess may be felt on the right side by bimanual palpation with one finger in the rectum (or vagina); such examination is of important corroborative value in many doubtful cases.

Chief Signs.—See page 512.

Carcinoma of the Pelvic Peritoneum.—*Characteristics.*—Multiple nodules may sometimes be felt per rectum, indicating secondary deposits in the pelvic peritoneum in carcinoma of any of the abdominal organs; there may be a nodular ring around the wall of the pelvis or nodules in the concavity of the sacrum; such finding is valuable in the determination of abdominal malignancy.

Chief Signs.—Cachexia; ascites (fluid often blood-tinged); symptoms referable to the primary growth.

Malformation of the Rectum.—*Characteristics.*—Such conditions as congenital anal stricture, imperforate anus, imperforate rectum, absence of the rectum, are determinable by digital rectal exploration.

Chief Signs.—Disturbance of defecation from birth with signs of obstruction of the bowel.

Intussusception.—*Characteristics.*—The apex of the intussusceptum, feeling like a soft os uteri, may be felt in many cases per rectum; bimanual palpation with one finger in the rectum may aid in determining the “sausage-shape” character of the tumor.

Chief Signs.—See page 511.

Less Common Causes.—Aneurysm of the internal iliac artery; abscess of the hip; fecal accumulation in the cecum or sigmoid; urethral calculus; vesical calculus; carcinoma of the bladder; dermoid cyst; ballooning of the rectum; invagination of the rectum; enlarged sacral glands; proctitis; prolapse of the sigmoid; tuberculosis of the ureters; sarcoma of the rectum; prostatic calculi.

THE LOWER EXTREMITY

SYMPTOMS	PAGE
Pain in the Hip	602
Pain in the Thigh or Thighs	603
Swellings in Scarpa's Triangle	606
Skin Affections of the Thighs and Groins	607

Pain in the Knee	607
Swelling of the Knee	610
Swelling in the Popliteal Space	613
Swelling of the Soft Parts of the Extremity	614
Swelling or Thickening of the Bones of the Extremity	615
Shortening of One Lower Extremity	617
Lengthening of One Lower Extremity	618
Diminished or Absent Knee-Jerk (One or Both Sides)	619
Exaggerated Knee-Jerk (One or Both Sides)	621
Paralysis of One Lower Extremity (Crural Monoplegia)	623
Paralysis of Both Lower Extremities, Spastic or Flaccid (Paraplegia)	624
Atrophy or Wasting of the Whole or Part of One Lower Extremity . . .	628
Atrophy or Wasting of the Whole or Part of Both Lower Extremities .	629
Numbness and Tingling in One or Both Lower Extremities	630
Pain in the Leg or Legs (Below the Knee)	631
Varicose Veins of the Leg	633
Ulcers of the Leg	634
Skin Affections of the Legs	635
Bow-Legs	636
Pain in the Ankle	637
Ankle-Clonus	638
Pain in the Foot or Toes	639
Enlargement of the Feet	642
Bilateral Edema of the Lower Extremities	642
Edema of One Foot and Leg	644
Ulcers of the Foot	645
Gangrene of the Toes or Foot	646
Redness of the Feet	647
Foot-Drop	648
Eversion of the Foot	649
Inversion of the Foot	649
Extensor Plantar Reflex (Babinski's Sign)	650
Deformities of the Foot	650
Deformities of the Toes	651

See also "Paralysis of the Upper and Lower Extremity on the Same Side," page 314; "Brittle Bones," page 671; "Contractures," page 682; "Skin Affections of the Elbows and Knees," page 324; "Skin Affections of the Palms and Soles," page 340; "Gait, Abnormalities of," page 721; and "Movements, Tremulous," page 748.

PAIN IN THE HIP

Contusion.—*Characteristics.*—Pain, soreness, and ecchymosis are present.

Chief Signs.—History of a fall or blow; exclusion of more serious injury.

Tuberculosis of the Hip-Joint.—*Characteristics.*—Pain is present and is increased by movements of the joint; pain may also be present along the inner side of the knee. The pain increases with the progress of the disease, is rendered more severe by any jarring motion to the knee or foot, and is apt to wake the patient suddenly from sleep (night cries, starting pains). Flexion associated with abduction and eversion of the thigh secures the greatest comfort.

Chief Signs.—Occurrence in children; limitation of movement of the hip; slight fullness about the hip or muscular atrophy; apparent lengthening of the limb due to tilting of the pelvis with scoliosis; muscular rigidity; later shortening; ankylosis; x-ray (revealing the erosion).

Osteo-Arthritis of the Hip-Joint.—*Characteristics.*—There is pain, often mistaken for sciatica, in and about the joint, with lameness. The pain and stiffness are worse when the patient moves after resting.

Chief Signs.—Occurrence usually after forty-five; insidious onset and course; stiffness and lameness; later shortening with abduction; finally ankylosis; affection of other joints; x-ray.

Fracture of the Neck of the Femur.—*Characteristics.*—The pain is severe and increased by the slightest motion and pressure.

Chief Signs.—History of injury with immediate loss of function; helpless eversion; crepitus if there is no impaction; swelling and ecchymosis; shortening; x-ray.

Sprain of the Hip.—*Characteristics.*—There are pain and tenderness in the region of the joint.

Chief Signs.—History of injury; swelling and muscular atrophy (acute synovitis); careful examination to exclude fracture, dislocation, or latent tuberculosis.

Acute Suppurative Arthritis (Osteomyelitis of the Hip-Joint).—*Characteristics.*—Severe pain and tenderness are present, aggravated by motion and worse at night.

Chief Signs.—Chill followed by fever and rapid pulse; redness, heat, swelling, and edema of the skin; fixation of the joint, usually in flexion; may be fluctuation; leukocytosis; culture of the joint-fluid.

Dislocation of the Hip.—*Characteristics.*—Pain may be severe.

Chief Signs.—History of forcible abduction and rotation of the thigh. Posterior variety:—inversion of the foot with adduction of the thigh; shortening; head of the femur posterior, with a depression over the front of the joint. Anterior variety:—eversion of the foot with abduction of the thigh; absence of shortening; head of the femur anterior, with the acetabular cavity empty.

Acute Rheumatic Fever.—*Characteristics.*—The hip may be affected but not as frequently as the other joints (ankle, shoulder, wrist, elbow).

Chief Signs.—See page 736.

Neurosis (*"Hysteria"; Neuromimesis; Nervous Mimicry*).—*Characteristics.*—Pain is present in the hip, intensified by any form of movement, and with tenderness on palpation. "Hysterical" hip is the most common joint manifestation of "hysteria."

Chief Signs.—Sudden onset after emotion or trauma; muscle spasm; apparent, but no real shortening; hyperesthesia; negative x-ray findings; normal motion under anesthesia; absence of constitutional symptoms.

Less Common Causes.—Gonorrheal arthritis; fracture of the greater trochanter; fracture of the lesser trochanter; fracture of the acetabulum; bone cyst of the acetabulum; exostosis of the acetabulum; scurvy; iliopsoas bursitis; bursa of the greater trochanter; obturator hernia; snapping hip; epiphysitis; traumatic coxa vara; osteitis fibrosis cystica; appendicitis; perinephritis; malignant disease of the hip.

PAIN IN THE THIGH OR THIGHS

Sciatica.—*Characteristics.*—Unilateral gnawing or burning pain, usually constant, but sometimes lancinating and paroxysmal, and often worse at night, is present in the posterior part of the thigh, radiating along the course of the sciatic nerve. There is marked tenderness at various points along the back of the thigh. Walking increases the pain, and flexion of the knee is the most comfortable position.

Chief Signs.—Pain and tenderness along the course of the nerve; if secondary, evidence of pelvic tumor, hip-joint disease, or spinal-cord affection; muscular atrophy in the protracted cases.

Fracture of the Femur.—*Characteristics.*—Severe pain is present increased by motion and pressure.

Chief Signs.—History of an injury followed by loss of function; swelling; muscular spasm; abnormal mobility; deformity; crepitus; shortening; x-ray.

Myalgia (*Myositis; Fibrositis*).—*Characteristics.*—Local pain is a prominent feature, dull and aching in character, or sharp, severe, and cramplike, and increased by muscular action.

Chief Signs.—Muscle soreness; pain on motion.

Abscess of the Thigh.—*Characteristics.*—Severe throbbing local pain is present.

Chief Signs.—Heat, redness, swelling, tenderness, induration, fluctuation; fever; muscle spasm; aspiration (pus).

Phlegmasia Alba Dolens (*Thrombophlebitis of the Femoral Vein; "Milk Leg"*).—*Characteristics.*—Pain and tenderness are present along the course of the vein.

Chief Signs.—Presence of a causative factor (infectious disease, pregnancy, pelvic operation); edema of the thigh and leg; swelling and induration of the vein with tenderness; distended peripheral veins.

Osteomyelitis of the Femur.—*Characteristics.*—Severe pain is present in the shaft of the bone.

Chief Signs.—Sudden onset with chills and fever; thigh swollen, tender, hot, and edematous; fluctuation if the abscess spreads from the bone; x-ray.

Osteoperiostitis of the Femur.—*Characteristics.*—Aching pain is present over the involved portion of the bone, worse at night and increased by pressure.

Chief Signs.—Fever; presence of a cause (trauma, acute or chronic constitutional disease); edema, redness, and swelling; deep tenderness; may be abscess formation; x-ray.

Spinal Syphilis (*Chronic Meningomyelitis*).—*Characteristics.*—As the meninges become surrounded by syphilitic exudate, the posterior roots passing through them become irritated, resulting in severe pains radiating about the trunk (girdle pains) and neuralgiform pains in the extremities. These vary from unbearable and continuous pains to mere light transient twinges.

Chief Signs.—History of infection (usually within five years; nocturnal pain in the back; pain in the root areas and paresthesias; retention of urine; impotence; paraplegia, partial or complete; partial anesthetics, often dissociated; increased deep reflexes; extensor plantar reflex; often signs of cerebral syphilis (cranial nerve palsies, etc.): positive Wassermann; spinal fluid examination (positive Wassermann, increased globulin, lymphocytosis, luetic curve).

Infantile Scurvy (*Barlow's Disease*).—*Characteristics.*—Severe pain and tenderness in the lower part of the thigh are usually present. The tenderness is so exquisite that any movement or even the slightest touch causes the child to scream with pain or apprehension.

Chief Signs.—Occurrence in infancy (six to sixteen months); extreme soreness of the legs or legs and arms; spongy swollen gums; swelling near the large joints; tendency to hemorrhage; history of prolonged use of some proprietary infant food, or sterilized or condensed milk.

Sarcoma of the Femur.—*Characteristics.*—Deep-seated boring pain is present, usually in the lower part of the thigh.

Chief Signs.—Irregular swelling in the lower end of the shaft of the femur, which may pulsate and crepitate; x-ray.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—Unilateral or bilateral stabbing, burning, tearing, or bursting pains with local hyperesthesia occur in the lower extremities, of brief duration and at irregular intervals (lightning pains). They are present in the early stages, before ataxia develops, and may persist in the ataxic stage. They may be spotlike in distribution.

Chief Signs.—Syphilitic history; ocular symptoms (optic atrophy, ptosis, ophthalmoplegia, myosis, Argyll-Robertson pupils); difficulty in emptying the bladder; loss of deep reflexes; later, ataxia; trophic disturbances; Charcot joints; visceral crises; spinal fluid examination (positive Wassermann, pleocytosis, tabetic curve); positive blood Wassermann.

Dysmenorrhea.—*Characteristics.*—The pain, constant or intermittent, cramp-like, bearing-down, or shooting, may radiate down the thighs from the pelvis or back.

Chief Signs.—For causes of Dysmenorrhea, see page 575.

Psoas Abscess.—*Characteristics.*—Pain may be felt along the inside of one thigh if the abscess presses upon the anterior crural nerve.

Chief Signs.—See page 536.

Carcinoma of the Spine.—*Characteristics.*—Root pains of an intensely excruciating character may radiate down the lower extremities along the distribution

of the affected root or roots, and although induced by movement, they are often entirely spontaneous in origin; they are usually unilateral.

Chief Signs.—Local pain and tenderness over the affected vertebræ; stiffness and deformity of the spine; hyperesthesia over the distribution of the affected nerve or nerves; later symptoms of cord compression (paralysis, anesthesia); presence of a primary growth elsewhere (prostate, breast); x-ray.

Obturator Hernia.—*Characteristics.*—Pain along the inside of one thigh and knee, and in the hip, may be present, due to pressure on the obturator nerve.

Chief Signs.—Cordlike mass felt deep in the thigh on bimanual palpation, extending up to the obturator foramen.

Fecal Impaction.—*Characteristics.*—Paroxysmal neuralgic pains may radiate down the backs of the thighs.

Chief Signs.—See page 593.

Tumor of the Spinal Cord.—*Characteristics.*—In tumors involving the meninges in the lumbar or sacral regions there is pain, dull or sharp, in various parts of the lower limbs, including the thigh; the root pains of tumor are more or less constant with paroxysmal exacerbations; they are generally unilateral at first and become bilateral as the disease spreads to the opposite side.

Chief Signs.—Progressive paraplegia usually affecting one lower limb before the other; motor and sensory paralysis below a fixed segmental level, all forms of sensation being lost or impaired, with a tendency to Brown-Sequard distribution; absence of sphincter weakness or only slight impairment until paraplegia is well developed; absence of signs of caries of the spine; spinal fluid examination (lemon-yellow color, increased globulin, may be pleocytosis); x-ray.

Anterior Crural Neuralgia and Neuritis.—*Characteristics.*—There is pain in the front of the thigh as far as the knee, sometimes extending down the inner side of the leg, foot, and big toe.

Chief Signs.—Tenderness along the course of the anterior crural nerve; may be diminished knee-jerk; may be wasting of the quadriceps femoris muscle with the reaction of degeneration; may be wound, dislocation of the hip, pregnancy, bone disease, psoas abscess, perispinal growth.

Meralgia Paræsthetica (*Neuritis of the External Cutaneous Nerve of the Thigh*).—*Characteristics.*—Pain along the outer side of the thigh is present, induced by standing or walking, and associated with paresthesia of that region.

Chief Signs.—Tenderness of the nerve just internal to the anterior superior iliac spine.

Less Common Causes.—Abdominal aneurysm; abdominal tumor; carcinoma of the colon; multiple myelomata; aneurysm of the femoral artery; dislocation of the hip; lumbosacral caries; nephrolithiasis (pain may radiate to the inner side of the thigh in renal colic); lumbar abscess; enlarged sacral glands; sacro-iliac disease; displacements of the uterus; prolapse of the uterus; vesical calculus; multiple sclerosis; pelvic peritonitis; pelvic tumor; oöphoritis; sarcoma of the vertebræ; multiple neuritis; acute myelitis; spinal meningitis; pregnancy; neuromata; cancer of the rectum; sarcoma of the innominate bone; tuberculosis of the hip-joint; iliopsoas bursa (pressing on the obturator nerve); tumor of the cauda equina; rider's leg (strain of the adductor muscles); thrombosis of the iliac arteries.

SWELLING IN SCARPA'S TRIANGLE

Scarpa's triangle is in the upper third of the thigh. Its base is formed by Poupart's ligament (the inguinal ligament), its outer side by the sartorius muscle, and its inner side by the adductor longus. It contains the femoral artery and vein, the obturator nerve, the long saphenous vein, and numerous lymphatics. At its upper and inner part is the saphenous opening.

Adenopathy.—*Characteristics.*—Lobulated masses may be felt in the region of the saphenous opening below Poupart's ligament, their character depending upon whether they are inflammatory, tuberculous, or carcinomatous. If suppurating, fluctuation may be elicited. The glands are distributed along Poupart's ligament and the femoral vessels.

Chief Signs.—Presence of a lesion in the area drained by the glands (lower anterior half of the abdomen, the genitalia, lower limb, anal, gluteal, and lumbar regions), if inflammatory or carcinomatous; other lymph gland involvement (*e.g.*, cervical) and evidence of tuberculosis elsewhere, if tuberculous.

Femoral Hernia.—*Characteristics.*—A moderate-sized, more or less lobular, reducible swelling which gives an impulse on coughing is present below Poupart's ligament, to the outer side of the pubic spine, and to the inside of the femoral vessels. The hernia passes along the femoral canal and protrudes through the saphenous opening.

Fracture-Callus.—*Characteristics.*—A hard bony callus may be felt in the region of Scarpa's triangle.

Chief Signs.—History of fracture of the upper third of the femur.

Psoas Abscess.—*Characteristics.*—A fluctuating globular tumor may be present below Poupart's ligament, external or internal to the femoral vessels, or on the inner side of the thigh.

Chief Signs.—See page 536.

Hip-Abscess.—*Characteristics.*—A soft, fluctuating, painless, and non-inflammatory abscess may be found in Scarpa's triangle, usually to the inner side of the vessels, having made its way from the hip-joint.

Chief Signs.—History and evidence of tuberculosis of the hip; incision (pus).

Lipoma.—*Characteristics.*—A soft, lobulated, elastic swelling may be present in the upper thigh, often presenting pseudofluctuation. It is ovoid in shape, and causes a dimpling of the skin when moved.

Saphenous Varix.—*Characteristics.*—A soft reducible swelling is present at the saphenous opening. It is reduced with a thrill instead of a gurgle (as occurs in femoral hernia) and reappears from below upward even when the finger blocks the femoral canal.

Chief Signs.—Presence of varicose veins of the thigh and leg.

Iliopectineal (Iliopsoas) Bursa.—*Characteristics.*—A swelling is present at the base of Scarpa's triangle under or to the outer side of the femoral artery if the bursa is enlarged. It is sometimes reducible.

Chief Signs.—May be pain down the inner side of the thigh; aspiration; thigh slightly flexed, abducted, and rotated outward.

Obturator Hernia.—*Characteristics.*—A cordlike mass deep in the thigh on the

inner side of the vessels may be felt on bimanual palpation, extending into the obturator foramen. It is rare and difficult of diagnosis.

Less Common Causes.—Ectopic testis; sarcoma.

SKIN AFFECTIONS OF THE THIGHS AND GROINS

Syphilis.—*Characteristics.*—Syphilitic lesions may appear upon the thigh as a part of a general eruption (see under "Skin, Affections of," page 766). The acuminate pustular lesions are always well marked upon the thighs.

Chief Signs.—See page 192.

Eczema.—*Characteristics.*—This appears usually on the inner surface of the thigh and in two forms: first, as large placards 30 cm. in length; or, second, as localized nummular placards which are roundish and a little raised, which weep and form yellow papery, often fissured crusts. In the groin, eczema is usually of the papular variety and is more marked when there is sweating.

Chief Signs.—Intense itching; chronicity.

Intertrigo (Chafing).—*Characteristics.*—The diaper region in children and the inner surface of the thighs of adults are frequently affected. Rapid hyperemia develops, which, as the condition progresses, may lead to maceration and a resulting serous discharge.

Chief Signs.—Sudden onset; feeling of heat and soreness.

Erythrasma.—*Characteristics.*—A reddish-brown, well-defined, scaly patch develops slowly, beginning in the inguinal region. It may come to cover a large area of the inner surface of the thigh.

Chief Signs.—Absence of subjective symptoms; presence of the *Microsporon minutissimum* in the scrapings.

Keratosis Pilaris.—*Characteristics.*—The outer surface of the thighs is affected. Small conical projections of a grayish color protrude from many of the larger hair follicles, which can easily be picked or squeezed out, leaving a minute opening.

Ichthyosis.—*Characteristics.*—The skin on the extensor surfaces in the mildest cases is dry, harsh, and roughened with considerable branlike scaling which is worse in windy weather. In severe cases the skin may be like a rasp.

Chief Signs.—Existence from early life; absence of all inflammatory symptoms.

Lichenification.—*Characteristics.*—The inner surface of the thigh below the groin is thickened, the surface is smooth and formed of flat lozenge-shaped papules separated by lines like parquetry and covered by the lesions of scratching.

Chief Signs.—Itching; chronicity.

Less Common Causes.—Scabies; Duhring's disease; leprosy; psoriasis; lichen planus; furunculosis; pityriasis tabes-centrum (desquamation of the bedridden); keratosis follicularis; sporotrichosis; prurigo.

PAIN IN THE KNEE

Acute Suppurative Arthritis (Septic Arthritis or Synovitis).—*Characteristics.*—There is great pain and tenderness with fixation of the joint.

Chief Signs.—History of neighboring wound or preceding pyogenic or infectious process; heat, swelling, and fluctuation of the joint; redness and edema of the skin; severe constitutional symptoms; later osseous crepitus.

Acute Rheumatic Fever.—*Characteristics.*—The knee-joint is exquisitely painful and tender and is especially sensitive on motion when it is involved. The disease begins most often with involvement of the knee, then spreads to other joints.

Chief Signs.—See page 736.

Osteo-Arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics.*—Pain is often a marked feature and is increased by movement. As the disease becomes chronic the pain may be replaced by soreness only on motion. The knee-joints are often involved, together with other joints, and effusion, limitation of motion, and later villous arthritis or subluxation occur.

Chief Signs.—See page 737.

Tuberculosis of the Knee-Joint.—*Characteristics.*—At first there is slight pain causing some limitation of motion of the extremity and limping. Night-cries are not common. When fully developed the pain in the joint varies from a discomfort on jarring and aching after use to an exquisitely painful condition of the joint.

Chief Signs.—Insidious onset; swelling, appearing late in the disease; muscle rigidity, holding the joint in a position of semiflexion; spindle-shape deformity; white skin; doughy or elastic sensation imparted to the finger on palpation; may be fluctuation; partial luxation; local rise of temperature; later sinuses; hectic fever; x-ray.

Sprain of the Knee.—*Characteristics.*—Pain is present following severe twists of the joint and is increased by motion, particularly flexion, the joint being most comfortable in extension.

Chief Signs.—History of a twist; tenderness; partial loss of function; swelling; effusion of fluid into the joint cavity (acute traumatic synovitis).

Fracture of the Femur (*Near the Knee-Joint*).—*Characteristics.*—There are pain and tenderness localized at the seat of fracture.

Chief Signs.—History of injury, usually by direct violence; swelling; muscular spasm; abnormal mobility; crepitus; deformity; possible shortening; x-ray.

Fracture of the Patella.—*Characteristics.*—There is pain in the front of the knee.

Chief Signs.—History of injury by direct violence or muscular action; may have been an audible crack; effusion of blood into the knee-joint; inability to extend the leg although walking backward is possible; separation of the fragments, and crepitus if the fragments can be brought together; inability to raise the limb from the bed; x-ray.

Dislocation of the Semilunar Cartilage (*Subluxation; Internal Derangement of the Knee*).—*Characteristics.*—Sudden violent, sickening pain is felt in the knee, which may be so severe as to cause the patient to fall to the ground; the knee is usually in a position of fixed semiflexion and any attempt to extend it is attended by excruciating pain.

Chief Signs.—History of injury accompanied by a twist of the partly flexed knee; usually locking of the joint in flexion (but when there is no locking the case is often taken for sprain); displaced cartilage occasionally felt, but more often

nothing but marked tenderness along the front of the tibia; on palpation, rapid swelling of the knee.

Floating Cartilage (*Loose Bodies in the Joint; Joint-Mice*).—*Characteristics*.—The pain is of a shifting character; from time to time the loose body lodges between the bones, temporarily locking the joint and producing intense and sickening pain.

Chief Signs.—Weakness of the joint with slight swelling; occasionally palpation of the loose body; attacks of locking of the joint, extension and flexion being impossible; x-ray if the body is dense and large.

Infantile Scurvy (*Barlow's Disease*).—*Characteristics*.—The soreness at first is not very definitely localized, but it is generally more marked about the knees and ankles. It is excruciating, the slightest touch causing the child to scream.

Chief Signs.—See page 604.

Prepatellar Bursitis (*Housemaid's Knee*).—*Characteristics*.—Pain and tenderness are slight unless the bursa is infected, when it may be severe.

Chief Signs.—History of repeated slight trauma or open wound; localized fluctuating swelling over the patella covered by movable skin.

Rupture of the Lateral Ligament.—*Characteristics*.—Sharp pain is present at the time of the injury, but pain is slight if the limb is kept at rest subsequently.

Chief Signs.—Injury by direct violence; abnormal lateral motion.

Tuberculosis of the Hip-Joint.—*Characteristics*.—Pain is often present along the inner side of the knee as well as in the hip (both joints being supplied by the obturator nerve), increased by movements of the hip-joint. Occasionally the pain may be limited to the knee. Pain in the knee calls for examination of the hip-joint as well as the knee.

Chief Signs.—See page 602.

Dislocation of the Patella.—*Characteristics*.—Pain is present if the dislocation is of traumatic origin.

Chief Signs.—Direct injury with the limb in extension; leg extended; knee broadened; intercondyloid notch perceptible; patella palpable usually on the outer or anterior surface of the external condyle.

Abscess (*Subcutaneous*).—*Characteristics*.—Severe pain is present but motion is not as painful as in arthritis. Tenderness is marked.

Chief Signs.—Heat, redness, swelling, fluctuation; fever; enlarged glands of the groin; pus superficial to the joint in the subcutaneous tissues.

Gonorrheal Arthritis.—*Characteristics*.—Except in the mildest cases the pain is severe. The knee, ankle, and wrist are most frequently involved, singly or less often combined.

Chief Signs.—Existence of subsiding or chronic gonorrhea; insidious onset; may be swelling; tenderness; periarticular thickening; often involvement of other joints; fever; sometimes suppuration; persistency; later ankylosis; examination of fluid aspirated for gonococci; complement-fixation test.

Osteosarcoma.—*Characteristics*.—Pain of a persistent, dull, boring character is present in the neighborhood of the knee if there is a sarcoma in the distal end of the femur or in the proximal end of the tibia or fibula, both frequent sites of bone sarcoma. Severe pain results if nerves are pressed on, which usually occurs in the periosteal or perforating central sarcoma. Pain from synovitis complicating

the condition may be severe and is not relieved by fixation as in synovitis from arthritis.

Chief Signs.—Local firm swelling; some degree of tenderness; local heat; enlarged veins over the tumor; sometimes crepitus; synovitis; metastasis (usually to the lung); x-ray; biopsy.

Infrapatellar Bursitis.—*Characteristics.*—Pain is present below the patella, more marked in acute cases.

Chief Signs.—Swelling and fluctuation beneath the patellar ligament; aspiration (serum and gelatinous substance).

Infective Arthritis of Infectious Diseases (*Particularly Typhoid Fever, Scarlet Fever, Pneumonia, Measles, Mumps, Variola, Cerebrospinal Fever*).—*Characteristics.*—Pain is present, though it may be moderate.

Chief Signs.—See page 612.

Pneumococcus Arthritis.—*Characteristics.*—Pain sets in abruptly and is very severe; there is exquisite tenderness.

Chief Signs.—Presence of pneumonia; usually most common in children under five years; usually monarticular, most often the knee; high fever; rapid swelling; fluctuation; aspiration of yellow-green pus (containing pneumococci).

Popliteal Aneurysm.—*Characteristics.*—Pain is usually present in back of the knee and may be referred down the leg.

Chief Signs.—See page 613.

Dislocation of the Knee.—*Characteristics.*—There is severe pain.

Chief Signs.—History of violent trauma, direct or indirect; shortening usually with extension; deformity; immobility; absence of crepitus.

Less Common Causes.—Acquired syphilitic arthritis (pain is slight); rupture of the crucial ligaments of the knee (only occurs with very grave injury to the joint); gout; tabes dorsalis (may radiate to or from the knee); intermittent hydrarthrosis (usually some pain but little tenderness); “hysterical” joint (nervous mimicry; neuromimesis); purpura rheumatica (Schönlein’s disease); hemophilia (injury with bleeding into the joint); bursitis (gastrocnemio-semimembranosa).

SWELLING OF THE KNEE

Sprain of the Knee (*Traumatic Synovitis*).—*Characteristics.*—The knee becomes swollen from edema of the soft tissues and effusion of fluid into the joint cavity. Fluid in the knee-joint is best demonstrated by compressing the culdesac beneath the quadriceps tendon with the palm of the hand while one finger of the other hand pushes the patella lightly but quickly backward to the femur, the leg being extended. If fluid is present the patella strikes the femur with an appreciable click.

Chief Signs.—See page 608.

Acute Suppurative Arthritis (*Septic Arthritis*).—*Characteristics.*—The knee is hot, swollen, and fluctuating, with redness and edema of the skin. The entire joint and the periarticular structures participate in the inflammation.

Chief Signs.—See page 607.

Tuberculosis of the Knee-Joint.—*Characteristics.*—A spindle-shaped enlargement appears in a well-developed case, due not only to the actual swelling but

also to atrophy of the neighboring muscles; the skin over the swelling is white. A peculiar doughy or elastic sensation is obtained on palpation.

Chief Signs.—See page 608.

Acute Rheumatic Fever.—*Characteristics.*—Swelling of the knee-joint, following and accompanied by intense pain, redness, and heat, often occur at the outset. The amount of swelling is variable, extensive effusion being rare and much of the enlargement being due to the infiltration of the periarticular tissues with serum. Other joints are involved in succession.

Chief Signs.—See page 736.

Osteo-Arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics.*—There may be a little swelling in the early stages with pain, stiffness, and creaking. Gradually the joint becomes more swollen, deformed, and finally ankylosed. The surrounding muscular atrophy augments the impression of enlargement.

Chief Signs.—See page 737.

Prepatellar Bursitis (*Housemaid's Knee*).—*Characteristics.*—A well-localized fluctuating swelling is present in front of the patella, covered by normal movable skin. This swelling may cover only the lower half of the patella and may extend over a part of the patellar ligament. Fluctuation is not affected by extension of the leg.

Chief Signs.—See page 609.

Acquired Syphilitic Arthritis.—*Characteristics.*—Swelling of the joint may occur from synovitis in the secondary stage. In the tertiary stage two varieties of arthritis may occur, both of which cause considerable swelling and disorganization of the joint, one being a gummatous arthritis with deposition of gummatous material in the subsynovial tissue, the other affecting the ends of the bone; thickening of the synovial membrane can be felt. This form is confined to a single joint.

Chief Signs.—Evidence of secondary or tertiary syphilis; positive Wassermann; therapeutic test or response to antisyphilitic treatment; x-ray.

Charcot's Joint (*Tabetic Arthropathy*).—*Characteristics.*—The joint is swollen, markedly deformed, painless and freely movable in any direction. The knee-joint is that most commonly affected; some of the biggest joints seen are those affected with tabetic arthritis.

Chief Signs.—Presence of tabes; rapid development of the painless joint swelling.

Congenital Syphilitic Arthritis.—*Characteristics.*—Both knees may be swollen and fluctuation present if there is much synovial exudation; the synovial membrane may feel thickened and irregular; in syphilitic osteochondritis, although the joint itself is not implicated, there is much swelling about the joint with pseudo-paralysis.

Chief Signs.—Occurrence in infancy or youth; history of syphilis; Hutchinson's teeth; interstitial keratitis; nerve deafness; rhagades; osseous nodes; positive Wassermann; therapeutic test; x-ray.

Infantile Scurvy (*Barlow's Disease*).—*Characteristics.*—The swelling of the thigh near the knee-joint includes the knee and is not confined to it. One limb may be twice the size of the other, though both are usually involved. The least movement causes agony.

Chief Signs.—See page 604.

Fracture of the Patella.—*Characteristics.*—Rapid and enormous swelling of the knee results from the effusion of blood into the joint, from edema of the soft parts, and later from synovitis.

Chief Signs.—See page 608.

Floating Cartilage (*Loose Bodies; Joint-Mice*).—*Characteristics.*—The joint becomes swollen from the effusion of a subacute synovitis.

Chief Signs.—See page 609.

Subperiosteal Hematoma (*Head of the Tibia*).—*Characteristics.*—A swelling is present just below the patella over the head of the tibia. It is tense, rounded, fluctuating, tender, immovable on the bone, and covered with normal skin.

Chief Signs.—History of a direct blow; aspiration of dark abnormal blood.

Dislocation of the Semilunar Cartilage.—*Characteristics.*—Swelling occurs from the accompanying synovitis.

Chief Signs.—See page 608.

Abscess (*Subcutaneous*).—*Characteristics.*—Localized swelling and edema are present.

Chief Signs.—See page 609.

Infrapatellar Bursitis.—*Characteristics.*—A tense fluctuating swelling is present below the patella and beneath the patellar ligament.

Chief Signs.—See page 610.

Infective Arthritis of Infectious Diseases (*Particularly Typhoid Fever, Scarlet Fever, Pneumonia, Measles, Mumps, Variola, Cerebrospinal Fever*).—*Characteristics.*—The knee may be swollen as a part of a multiple infective process in the joints or may be involved alone; it is hot, swollen, and painful, with dusky, thickened, and brawny soft tissues.

Chief Signs.—Association with some infectious disease or process; if multiple, simultaneous involvement of joints (as opposed to rheumatic fever); absence of alleviation by antirheumatic drugs; later dislocation.

Pneumococcus Arthritis.—*Characteristics.*—The joint swells rapidly.

Chief Signs.—See page 610.

Gonorrheal Arthritis.—*Characteristics.*—The swelling is not great and is due mostly to the edema of the soft tissues about the joint.

Chief Signs.—See page 609.

Osteosarcoma.—*Characteristics.*—The knee-joint may be swollen due to a secondary synovitis.

Chief Signs.—See page 609.

Dislocation of the Knee.—*Characteristics.*—Obvious deformity with swelling is present. The diagnosis is simple.

Chief Signs.—See page 610.

Less Common Causes.—Contusion of the periosteum (head of the tibia); subperiosteal abscess (head of the tibia); hemophilia (hemarthrosis from trauma); intermittent hydrarthrosis; syringomyelia; osteomyelitis (if near the joint); rickets; chronic hydrarthrosis (gonorrheal); hemiplegia; lead poisoning; hypertrophic pulmonary osteo-arthritis.

SWELLING IN THE POPLITEAL SPACE

Popliteal Aneurysm.—*Characteristics.*—An expansile, pulsating tumor is present. The pulsations are synchronous with the heart beats. Pressure on the femoral artery causes a diminution in the size of the swelling and cessation of pulsation.

Chief Signs.—Pain, weakness, and stiffness in the knee-joint; bruit; weak pulse in the anterior tibial artery; edema of the foot and leg; aspiration (blood).

Popliteal Bursa (Ganglion).—*Characteristics.*—The bursa lying between the gastrocnemius and the semimembranosus muscles, when enlarged, produces a tense, fluctuating swelling in back of the knee, on the inner side when the leg is extended, and may exhibit transmitted but not expansile pulsation. When the leg is flexed it is soft and may be difficult to detect.

Chief Signs.—Aspiration (gelatinous substance or serum).

Abscess.—*Characteristics.*—A painful, inflammatory, fluctuating swelling is present, which may transmit the pulsations of the popliteal artery (but is not expansile). It is superficial if due to suppurating glands, deep if due to periostitis or bone necrosis.

Chief Signs.—Fever; flexion of the knee; edema of the leg; enlarged glands in the groin; aspiration (pus).

Varicose Veins.—*Characteristics.*—Soft fluidlike, tortuous swellings are present covered by thin discolored skin.

Chief Signs.—Presence of varicose veins of the leg.

Baker's Cyst.—*Characteristics.*—A non-inflammatory, fluctuating swelling occurs in the popliteal space, covered by pallid or livid skin, as an extension of a chronic abscess of the knee from tuberculosis of that joint.

Chief Signs.—Absence of signs of inflammation; signs of tuberculosis of the knee (see page 608).

Exostosis.—*Characteristics.*—A slow-growing, well-defined tumor is found on the inner side of the popliteal space due to a cancellous exostosis arising from the region of the epiphyseal cartilage of the femur.

Chief Signs.—Occurrence in children or young adults; presence of other exostoses on other bones or in members of the same family; x-ray.

Osteosarcoma.—*Characteristics.*—A general enlargement of the lower end of the femur or upper end of the tibia may be due to a periosteal sarcoma of one of these bones. A central sarcoma causes a well-defined tumor resembling chronic osteitis or periostitis.

Chief Signs.—See page 609.

Periostitis.—*Characteristics.*—A large swelling with signs of abscess formation may be due to acute periostitis. Chronic periostitis, chronic abscess of the bone, or central necrosis may cause a well-defined tumor in this region.

Chief Signs.—If acute, signs of sepsis and pain; if chronic, x-ray and biopsy.

Less Common Causes.—Lipoma; sarcoma of the soft tissues; separation of the epiphysis (lower end of the femur, with displacement of the lower fragment backward); adenopathy.

SWELLINGS OF THE SOFT PARTS OF THE EXTREMITY

Contusion.—*Characteristics.*—There is local swelling, pain, and ecchymosis.

Chief Signs.—History of a blow; exclusion of fracture.

Abscess.—*Characteristics.*—A superficial abscess in the thigh or leg is usually associated with much edema and cellulitis, so that the presence of pus is not always easy to determine.

Chief Signs.—History of a contused or lacerated wound, scratch, or insect bite; pain, heat, redness; may be fluctuation; incision (pus).

Furuncle and Carbuncle.—*Characteristics.*—A red pimple forms which increases in size and becomes inflammatory. In a furuncle there is one point of suppuration, in a carbuncle several.

Fracture.—*Characteristics.*—Swelling of the soft parts with ecchymosis of the skin develops soon after the injury.

Chief Signs.—See page 688.

Phlebitis and Thrombosis.—*Characteristics.*—When developing in a varicose vein there is swelling, heat, redness, and pain over an area an inch broad and more or less long, according to the extent of the inflamed or thrombosed vein.

Chief Signs.—Presence of varicose veins; palpation of a tender indurated cord in the leg.

Subcutaneous Rupture of a Vein.—*Characteristics.*—A varicose vein may be ruptured by a blow, and if the skin is not broken, a hematoma will form. An even, rounded, bluish tumor results, which may fluctuate. There may be ecchymosis of the overlying skin.

Chief Signs.—Presence of varicose veins; history of contusion.

Lipoma and Fibrolipoma.—*Characteristics.*—There is a lobulated, soft, often semifluctuating tumor mass. The skin is dimpled when an attempt is made to lift it from the tumor.

Rupture of the Rectus Femoris.—*Characteristics.*—A few fibers of the rectus may be ruptured. The rectus stands out tense and rigid, and there may be considerable swelling from inflammatory effusion. Sometimes the quadriceps femoris is torn from its insertion into the patella. The muscle contracts and forms a bunch in the thigh.

Chief Signs.—History of a severe strain; sudden pain in the thigh; palpation of a gap above the patella if the quadriceps is detached from the patella.

Rupture of the Plantaris.—*Characteristics.*—A tender swelling suddenly occurs in the posterior part of the calf.

Chief Signs.—History of violent exercise; sudden sharp pain in the calf; later ecchymosis.

Sarcoma.—*Characteristics.*—When originating in the dense connective tissues, this tumor has a fibrous appearance and feel (fibrosarcoma), and may be mistaken clinically for a fibroma.

Chief Signs.—Biopsy; recurrence after removal; metastasis rare.

Trichiniasis.—*Characteristics.*—There is swelling and tension of the muscles, over which the skin may be edematous. The muscles are painful on pressure and movement.

Chief Signs.—See page 660.

Less Common Causes.—Sebaceous cyst; myoma; carcinoma; rupture of the tendon of the adductor longus (from riding); myositis ossificans.

SWELLING OR THICKENING OF THE BONES OF THE EXTREMITY

Trauma (*Subperiosteal Hematoma*).—*Characteristics.*—A swelling may appear due to the extravasation of blood or serous fluid under the periosteum. It may disappear rapidly or leave a small permanent thickening or node.

Callus.—*Characteristics.*—Following a fracture, a callus is formed which produces a large swelling if the broken ends do not lie in accurate apposition or if there is too much movement between them. After four to six weeks the callus begins to be absorbed and it may disappear entirely. In most cases a small permanent swelling indicates the site of the fracture.

Osteomyelitis.—*Characteristics.*—In acute pyogenic forms swelling occurs over the affected bone, accompanied by signs of inflammation (acute pain, tenderness, redness, and edema). In chronic cases the swelling may last indefinitely as an osteosclerosis or may terminate in suppuration.

Chief Signs.—See page 603.

Rickets (*Rachitis*).—*Characteristics.*—The bones are markedly affected. There are symmetrical swellings of the epiphyses, especially marked at the ankles and wrists, with bowing of the bones.

Chief Signs.—See page 636.

Tuberculosis of the Bone.—*Characteristics.*—Swelling of the bone itself is not great, though the soft parts around the bone may be considerably swollen. Tuberculous dactylitis forms a periosteal thickening in young children, especially of the metacarpal and phalangeal bones. Periostitis may develop in any long bone. In the long bones in children the disease usually begins in the metaphysis, in adults in the epiphysis. Chronic abscess usually forms in the articular extremity of a long bone, commonly the upper end of the tibia in the young adult. Swelling results only when the abscess approaches the surface and involves the periosteum.

Chief Signs.—History or the presence of tuberculosis; may be history of trauma; boring pain and tenderness; von Pirquet test; x-ray.

Syphilis of the Bone.—*Characteristics.*—Bone swellings may occur in congenital syphilis, and in the secondary and tertiary stages of acquired syphilis. Epiphysitis with separation occurs in the newborn syphilitics and is very painful. The ends of the bones enlarge and present some resemblance to rickets, but the swellings occur much earlier. In the secondary stage, periostitis may affect the bones, most often the tibia, clavicles, sternum, ribs, or skull, causing several painful swellings which may leave permanent nodes. In the tertiary stage, gummata may give rise to localized swellings or cause osteomyelitis with general thickening.

Chief Signs.—History or evidence of syphilis; positive Wassermann; improvement with iodid therapy; x-ray.

Infantile Scurvy (*Barlow's Disease*).—*Characteristics.*—Some swelling just above the ankle joints is noted early. Later the swelling near the joints, particularly the knee, may be so great that the limb is nearly twice the size of its fellow or of its normal size. These swellings are exquisitely tender.

Chief Signs.—See page 604.

Exostosis (*Osteoma*).—*Characteristics.*—A swelling may occur at the epiphyseal line of a long bone, especially at the lower end of the femur. An exostosis may form under the nail of the great toe, pushing up the nail and causing pain. Exostoses may be multiple and hereditary. Other sites are the points of insertion of the tendons, particularly on the inner side of the knee and the posterior end of the plantar ligament on the under surface of the os calcis. Ivory exostoses may be found on the flat bones of the skull, in the auditory meatus, or on the orbital plate of the frontal bone, causing a unilateral exophthalmos.

Chief Signs.—X-ray.

Chondroma.—*Characteristics.*—Chondromata produce a gradually increasing deformity of the bones. They are most commonly multiple, and in the lower extremity grow usually from the femur or bones of the foot.

Chief Signs.—Pain in the affected part; ulceration of the superjacent skin; x-ray.

Periosteal Sarcoma.—*Characteristics.*—There is usually a rapidly growing swelling, generally about the end of a long bone. It is not usually painful and the signs of local inflammation and general fever are little marked or absent.

Chief Signs.—Occurrence in young adults; often a history of injury to the part; prominence of the veins over the swelling; enlargement of neighboring lymphatics; gradual loss of weight and strength; cachexia; metastasis, often in the lung; x-ray; biopsy (examination of the decalcified section).

Endosteal or Myeloid Sarcoma.—*Characteristics.*—A more or less uniform, slowly growing, at first stony hard, swelling appears, usually near the end of a long bone, particularly the femur, upper end of the humerus, lower end of the radius, sternal end of the clavicle, or upper jaw.

Chief Signs.—Pain; later softening or crackling on pressure; absence of swelling of the lymph glands; absence of metastases; absence of fracture history eliminating callus; x-ray.

Carcinoma (*Secondary*).—*Characteristics.*—A swelling of bone may be found, but this is rarely discovered until the attention is called to it by a spontaneous fracture.

Chief Signs.—Presence of a primary growth; x-ray.

Osteitis Deformans (*Paget's Disease*).—*Characteristics.*—There may be enlargement or softening of the bones.

Chief Signs.—Occurrence after forty; enlargement of the cranial bones, the facial bones escaping; triangular face with the base upwards; diminution of height due to kyphosis and outward curvature of the extremities; sunken chest; broadened pelvis; rheumatic pains; awkward gait; slow progression; x-ray.

Acromegaly.—*Characteristics.*—Swelling is due to skeletal overgrowth and may affect all parts of the body, but particularly the forearms, hands, legs, feet, jaws, nose, and orbital ridges.

Chief Signs.—Spadelike hands; sausage-shaped fingers; prognathism; separation of the teeth; triangular face with the base downward; thyroid enlargement; arteriosclerosis; headache; malaise; glycosuria; x-ray of the sella turcica.

Less Common Causes.—Erythema nodosum; typhoid fever (periosteal node or abscess); fibromata of the bone; lipomata of the bone; blood cysts (found in de-

generating sarcomata); hydatid cysts; osteitis fibrosa; achondroplasia; separated epiphysis; acute epiphysitis; leontiasis ossea; osteo-arthritis; pulmonary osteo-arthropathy; Schlatter's disease (inflammation of the tibial tuberosity); multiple myeloma.

SHORTENING OF ONE LOWER EXTREMITY

The length of a lower limb may be measured by a tape from the lower surface of the projecting anterior superior spine of the ilium to the lower edge of the inner malleolus. An easy method of determining irregularity in the length of the lower limbs is to have the patient stand, if possible, with both knees straight and without support. The observer then stoops in front of the patient and places his thumbs upon the prominences of each anterior superior spine. The eye can then detect even a slight difference in the level of the two spines. False shortening occurs in lateral curvature of the spine, malignancy, pelvic cellulitis, vertebral subluxation, and sacro-iliac disease or subluxation.

Fracture of the Femur.—*Characteristics.*—The lower extremity is shortened at the time of the injury by fracture of any portion of the femur except the trochanters or the condyles. A certain amount of shortening usually persists even after reduction and healing.

Chief Signs.—History of injury followed by immediate loss of function, or history of an old fracture; pain; swelling; ecchymosis; deformity and abnormal mobility according to the site of the fracture; crepitus; x-ray.

Tuberculosis of the Hip.—*Characteristics.*—Actual shortening of the limb occurs only late when erosion of bone or dislocation backwards takes place. Apparent shortening is present if an abscess forms and the ligaments are shortened and weakened, when the limb becomes flexed, adducted, and inverted, the pelvis elevated on the diseased side, and the lumbar spine convex toward the sound side. Earlier, apparent lengthening is noted due to lowering of the pelvis on the diseased side.

Chief Signs.—See page 602.

Infantile Paralysis (*Poliomyelitis*).—*Characteristics.*—One limb may be shorter than the other in an individual who at one time had an attack of acute anterior poliomyelitis with permanent residual paralysis affecting a group of muscles of the lower extremity.

Chief Signs.—History of infantile paralysis; failure of development of the group of muscles permanently affected; flail-joint; limp.

Infantile Hemiplegia (*Long-standing*).—*Characteristics.*—Shortening occurs from arrest or impairment of growth on the paralyzed side, or from contractures.

Chief Signs.—History of acute cerebral catastrophe in infancy resulting in hemiplegia; involvement of the arm as well as the leg; strabismus, ocular palsy, or aphasia; athetoid or choreiform movements; hemiplegic gait, the patient walking on the toes; compensatory tilting of the pelvis; epileptiform seizures (78 per cent).

Separation of the Lower Epiphysis of the Femur.—*Characteristics.*—There may be impairment of the growth of the femur following union.

Chief Signs.—History of twisting of the leg followed by evidence of fracture through the epiphysis.

Congenital Dislocation of the Hip.—*Characteristics.*—The limb is shortened

with deformity of the hip, compensatory obliquity of the pelvis, anterior curvature of the spine with scoliosis, and a limp.

Chief Signs.—See page 550.

Dislocation of the Hip (*Traumatic Posterior*).—*Characteristics.*—Shortening is present, the amount depending upon the position of the head of the femur. The shortening is best seen with the thigh flexed at a right angle.

Chief Signs.—See page 602.

Coxa Vara.—*Characteristics.*—The limb is shortened, the trochanter is above Nélaton's line (anterior superior spine to the ischial tuberosity), and abduction is limited.

Chief Signs.—History of rickets, osteomalacia, osteitis deformans, chronic inflammatory affection of the bone, fracture of the neck of the femur; may be congenital; pain; lameness; commonly eversion of the foot with restriction of internal rotation, less commonly the reverse; tilting of the pelvis; x-ray (showing downward bending of the neck of the femur).

Old Osteomyelitis.—*Characteristics.*—The growth of a limb may be affected if an earlier attack of acute osteomyelitis previous to puberty has involved one of the epiphyseal cartilages of the lower extremity.

Chief Signs.—History of acute osteomyelitis near a joint of the lower extremity a year or more previous; shortening of one limb without muscle atrophy; limp; x-ray.

Less Common Causes.—Separation of the epiphysis of the head of the femur; osteo-arthritis (in the aged); fracture of the tibia; "hysterical" hip (may be apparent shortening); separation of either epiphysis of the tibia.

LENGTHENING OF ONE LOWER EXTREMITY

Coxa Valga.—*Characteristics.*—The limb is lengthened, the trochanter is below Nélaton's line (anterior superior spine to the tuberosity of the ischium), and adduction is restricted.

Chief Signs.—As in coxa vara (see above); x-ray (showing increase in the angle between the neck and the shaft of the femur).

Dislocation of the Hip (*Traumatic Anterior*).—*Characteristics.*—Slight lengthening may be present but is usually difficult to demonstrate.

Chief Signs.—See page 602.

"Hysterical" Hip Disease.—*Characteristics.*—The extremity may be lengthened due to relaxation of the ligaments (Putnam's sign).

Chief Signs.—See page 603.

Sacro-iliac Disease.—*Characteristics.*—There is apparent lengthening of the limb on the affected side due to the fact that the patient limps, putting most of his weight on the sound leg, the body being bent forward and away from the diseased side.

Chief Signs.—See page 544.

Tuberculosis of the Hip-Joint.—*Characteristics.*—In the early stage, when the patient stands or walks, most of the weight is borne on the sound leg, causing lowering of the pelvis on the diseased side with apparent lengthening of the limb.

Chief Signs.—See page 602.

DIMINISHED OR ABSENT KNEE-JERK*(One or Both Sides)*

Diminution or absence of the knee-jerk is almost always an indication of organic disease of the nervous system. This reflex may be diminished or absent, however, in infants suffering from acute febrile or debilitating disorders. In cases of infectious disease with grave toxemia the knee-jerk may be abolished without organic disease of the nervous system, especially in cases of lobar pneumonia and diphtheria. When the intracranial pressure is greatly increased as in some cases of intracranial tumor, the knee-jerk is variable, present at one examination and absent at another. In terminal coma from any cause the knee-jerk is abolished. If one knee-jerk is diminished or absent they are obviously unequal.

Before concluding that the knee-jerk is diminished or absent the examiner should be certain that complete relaxation is obtained by the use of various methods of "reinforcement," *i.e.*, distraction of the patient's attention from the test. In some cases contraction of the quadriceps may be felt by placing the hand upon the thigh, even when it may not be visible. Rarely the knee-jerks are congenitally absent.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics*.—The knee-jerks (together with the ankle-jerk) gradually decrease, and one may be lost before the other or disappear first in one leg. This is one of the earliest symptoms of the disease and may occur years before the development of ataxia. This finding, combined with ocular symptoms, the lightning pains, bladder difficulties, or trophic disturbances, should suggest tabes in the absence of ataxia or other symptoms.

Chief Signs.—History of syphilis (six to fifteen years previous); lightning pains; Argyll-Robertson pupils; Romberg's sign; later, ataxic gait; sensory changes; trophic lesions; hypotonia; visceral crises; difficulty in micturition; optic atrophy; ocular palsies; positive Wassermann; spinal fluid examination (positive Wassermann, increased globulin, lymphocytosis, colloidal gold reaction, tabetic curve).

Multiple Neuritis (*Alcohol, Diphtheria, Diabetes, Arsenic, Tubercle, Cachexia*).—*Characteristics*.—The knee-jerks are often diminished or absent and may remain in abeyance for a long period after the paralysis has disappeared.

Chief Signs.—Onset with neuralgia and numbness and tingling of the extremities; symmetrical distribution; loss of power, especially in the extensor muscles below the knee and elbow (wrist-drop and foot-drop); flaccid paralysis and wasting of the muscles; diminution of electric excitability, or the reaction of degeneration; sphincters unaffected; presence of an etiological factor with special characteristics in each case.

Apoplexy (*Cerebral Hemorrhage*).—*Characteristics*.—The deep reflexes disappear during the deep coma of the apoplectic stroke. As the coma lessens and the general condition improves these reflexes reappear except on the paralyzed side, where they are absent until spastic paralysis replaces the primary flaccidity.

Chief Signs.—Age rarely under forty; may be premonitory symptoms (numbness and tingling, headache, giddiness or vomiting, epistaxis, visual or mental disturbances); gradual or sudden development of paralysis and coma; may be signs of

arteriosclerosis and hypertension; stertorous respiration; cyanotic facies; spluttering lips; flapping of the cheeks; pupils inactive, usually dilated or unequal; pulse slow, full, incompressible; temperature normal or subnormal; reflexes absent; incontinence of urine and feces; later rigidity, increased reflexes, plantar extension, ankle-clonus; residual hemiplegia; speech disturbance.

Cerebral Thrombosis.—*Characteristics.*—The knee-jerk on the paralyzed side is frequently abolished in the beginning (flaccid stage) or else much diminished. This stage may last for a few weeks to be replaced by spasticity and increased knee-jerks.

Chief Signs.—Presence of syphilis in an adult, or arteriosclerosis after middle age; premonitory symptoms (headache, numbness, giddiness, tingling); gradual onset; may or may not be loss of consciousness; hemiplegia (extending from monoplegia).

Cerebral Embolism.—*Characteristics.*—The knee-jerk may be abolished in the early period if the leg is involved in the paralysis. Spasticity with increase of the deep reflexes follows later.

Chief Signs.—Occurrence in young adults with endocarditis; sudden onset; absence of premonitory symptoms; loss of consciousness, rarely deep; convulsions common; monoplegia or hemiplegia; may be emboli in the retina or other sites.

Acute Anterior Poliomyelitis (*Infantile Paralysis*).—*Characteristics.*—The knee-jerk is abolished if the quadriceps femoris is paralyzed in one or both legs (usually one). The loss is permanent if there is residual paralysis of this muscle.

Chief Signs.—See page 628.

Transverse Myelitis (*Syphilitic; Compression; Infective*).—*Characteristics.*—The deep reflexes below the lesion, including the knee-jerks, are lost only when the process is complete and above the lumbar enlargement. When partial, in the early stage they may be diminished but later become increased.

Chief Signs.—History and evidence of syphilis, vertebral disease or trauma, infectious disease, or idiopathic; acute onset; paralysis of the lower extremities (flaccid or spastic); anesthesia or impairment of sensation below a definite level; abolition of the superficial abdominal reflexes; incontinence of urine; pain at the level of the lesion if accompanied by meningitis.

Fracture-Dislocation of the Spine.—*Characteristics.*—The deep reflexes below the level of the lesion, including the knee-jerks, are abolished if the injury is located above the lumbar enlargement and there is complete transection or destruction of the cord. The symptoms of complete lesion may be present at first even without actual destruction (edema, hemorrhage).

Chief Signs.—See page 625.

Progressive Muscular Atrophy.—*Characteristics.*—The knee-jerks diminish and disappear concurrently with the muscular atrophy of the thigh, which occurs relatively late in the course of the disease.

Chief Signs.—See page 319.

Lesions of the Cauda Equina (*Fracture; Neoplasm; Gumma*).—*Characteristics.*—The knee-jerks are absent.

Chief Signs.—History of injury if traumatic; symptoms often asymmetrical; saddle-shaped area of anesthesia in the gluteal region, also perineum, scrotum, and urethra; pain in the nerve areas; paralysis with flaccidity and rapid wasting below

the knees and in the buttocks; sphincter paralysis; loss of sexual power; x-ray.

Friedreich's Disease.—*Characteristics.*—The knee-jerks may at first be unaffected but later become diminished and eventually are abolished.

Chief Signs.—See page 21.

Less Common Causes.—Caisson disease (increased or decreased); tuberculosis of the spine; amyotonia congenita; spinal anesthesia; paralysis of the femoral (anterior crural) nerve from pressure; beriberi; chorea; chronic ergotism; fatigue; hematomyelia (at first); hydrocephalus; leprosy; myasthenia gravis (disappear after several tappings, from fatigue); paralysis agitans; pernicious anemia; acute pneumonia; subacute combined degeneration of the spinal cord (lost in the last stage); sciatica; shock (transient); progressive muscular atrophy of children; meningeal spinal hemorrhage; subtentorial tumor; lead neuritis; tumor of the pons; acute ascending paralysis (Landry's paralysis); exophthalmic goiter; taboparesis; syringomyelia (if the lumbar segments are involved); crural nerve injury; tuberculous meningitis (knee-jerks variable); pseudohypertrophic muscular dystrophy (diminished as atrophy develops); epilepsy (may be temporary loss after a severe fit); meningeal hemorrhage (terminal coma); trichiniasis; botulism; pellagra (knee-jerks variable); adiposis dolorosa; encephalitis lethargica; amaurotic family idiocy (decreased, increased, or normal).

EXAGGERATED KNEE-JERK

(One or Both Sides)

Functional loss of control occurs whenever the general health or nervous tone is below par. Exaggeration of the knee-jerks may be present in any constitutional ailment. If due to organic disease of the nervous system there will be other signs in addition, usually other reflex changes, extensor plantar reflex (positive Babinski), ankle-clonus, spastic condition of the lower extremities, and disturbances of the sphincters. These signs indicate a lesion of the upper motor neuron (pyramidal tract), either in the brain or cord. If one knee-jerk is exaggerated, the knee-jerks are obviously unequal.

Hemiplegia.—*Characteristics.*—The knee-jerk on the affected side becomes exaggerated as the spasticity develops, following abolition or diminution in the primary flaccid stage.

For causes of Hemiplegia, see page 314.

General Paresis (*Dementia Paralytica; General Paralysis of the Insane*).—*Characteristics.*—The knee-jerks are usually exaggerated but may be unequal.

Chief Signs.—See page 100.

Transverse Myelitis (*Thrombosyphilitic; Infective*).—*Characteristics.*—The deep reflexes below the lesion are exaggerated when the lesion is incomplete, as it often is.

Chief Signs.—See page 620.

Spastic Paralysis of Infants (*Spastic Diplegia; Birth Palsy; Little's Disease*).—*Characteristics.*—The knee-jerks, together with the other deep reflexes, are increased.

Chief Signs.—See page 626.

Spinal Syphilis (*Chronic Meningomyelitis*).—*Characteristics*.—The knee-jerks may be exaggerated with evidence of meningitis (root pains, sensory impairment, spastic paraplegia), or of incomplete transverse myelitis (spastic paralysis, anesthesia, sphincter disturbances).

Chief Signs.—History of syphilis; evidence of secondary or tertiary syphilis; positive Wassermann (blood or spinal fluid); pleocytosis of the spinal fluid in meningitis.

Cerebral Tumor.—*Characteristics*.—The knee-jerk is increased on the side opposite the lesion, if from pressure on, or infiltration of, the motor area or tract the growth causes hemiplegia or paralysis of the lower extremity. The usual signs of hemiplegia are associated. This condition usually occurs late.

Chief Signs.—See page 687.

Tumor of the Spinal Cord.—*Characteristics*.—The knee-jerks are usually increased with other signs of transverse myelitis when the tumor is above the lumbar enlargement (spastic paraplegia, etc.). The symptoms are often unilateral with increased reflexes on the side opposite the tumor.

Chief Signs.—See page 624.

Tuberculosis of the Spine (*Spinal Caries; Pott's Disease*).—*Characteristics*.—The knee-jerks gradually become exaggerated as the pressure increases, with other signs of transverse myelitis (spastic paraplegia, etc.). This occurs most often in caries of the vertebræ of the cervicodorsal region.

Chief Signs.—See page 625.

Multiple Sclerosis.—*Characteristics*.—The knee-jerks are usually increased and may be greatly exaggerated.

Chief Signs.—See page 626.

Primary Ataxic Paraplegia (*Posterolateral Sclerosis*).—*Characteristics*.—The reflexes are increased from the outset.

Chief Signs.—See page 627.

Amyotrophic Lateral Sclerosis.—*Characteristics*.—The knee-jerks are early increased but in the later stages may be abolished.

Chief Signs.—See page 627.

"Hysterical" Spastic Paraplegia.—*Characteristics*.—The knee-jerks may be increased.

Chief Signs.—Occurrence in a "hysterical" patient; slight loss of power, wasting, or sensory disturbance; ankle-clonus usually spurious.

Subacute Combined Degeneration of the Spinal Cord (*Primary Combined Sclerosis*).—*Characteristics*.—The knee-jerks are exaggerated until late, when they are lost.

Chief Signs.—See page 625.

Primary Lateral Sclerosis (*Spastic Paralysis of Adults*).—*Characteristics*.—The reflexes are greatly increased, the slightest touch upon the patellar tendon producing an active knee-jerk.

Chief Signs.—See page 627.

Hereditary Spastic Paraplegia.—*Characteristics*.—The deep reflexes are increased.

Chief Signs.—See page 627.

Hydrocephalus (*Congenital, Primary, and Secondary*).—*Characteristics*.—

Exaggerated knee-jerks and other deep reflexes are common, attributable to abnormal intracranial pressure.

Chief Signs.—See pages 13, 708.

Less Common Causes.—Lathyrism (lupinism); amaurotic family idiocy (increased, decreased, or normal); Erb's syphilitic spinal paralysis; multiple or peripheral neuritis (may be increased in the early stages, lost later); syringomyelia (deep reflexes increased below the lesion); caisson disease (increased or decreased); malignant disease of the vertebræ; hypertrophic cervical meningitis; Brown-Sequard paralysis (hemisection of the cord, increased on the side of the lesion); hereditary cerebellar ataxia; rabies; paramyoclonus multiplex (variable); pellagra (variable); strychnin poisoning; tetanus; uremia; paralysis agitans; cerebellar tumor (may be increased on the side of the lesion); hematomyelia (later).

PARALYSIS OF ONE LOWER EXTREMITY

(*Crural Monoplegia*)

This condition is usually produced by disease of the spinal cord or peripheral nerves and only rarely by a cerebral lesion. Unilateral lesions of the spinal cord give what is known as the Brown-Sequard syndrome. There is motor paralysis with rigidity and increased deep reflexes of the leg on the side of the lesion, and absence of paralysis with anesthesia to pain and temperature (sometimes touch) on the opposite side.

Acute Anterior Poliomyelitis (*Infantile Paralysis*).—*Characteristics.*—A flaccid atrophic paralysis of one of the muscular groups of the lower extremity (quadriceps femoris, adductors of the thigh, or anterior tibial muscles) is usually the remains of this disease. One leg is most frequently affected.

Chief Signs.—See page 628.

Spinal Syphilis (*Chronic Meningomyelitis*).—*Characteristics.*—Crural monoplegia, with motor palsy and sensory loss following a root distribution, occurs when the roots of the lumbosacral cord are involved on one side.

Chief Signs.—See page 622.

Sciatic Nerve Paralysis (*From Hip-Joint or Pelvic Disease*).—*Characteristics.*—The leg cannot be flexed on the thigh and the movements of the ankle-joint are abolished. The leg is held stiff and the foot is flail-like.

Chief Signs.—Presence of the primary lesion involving the nerve by pressure or traumatism; characteristic paralysis; sensory loss on the outer side of the leg and the whole of the foot, except a small area on the inner aspect.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—Spastic paralysis of one leg may occur if a patch of sclerosis is located unilaterally above the lumbar enlargement of the cord.

Chief Signs.—See page 626.

Paralysis Agitans (*Parkinson's Disease; "Shaking Palsy"*).—*Characteristics.*—Loss of power in one leg may be the chief complaint in some cases. The limb may not appear abnormal except perhaps for slight paresis and slight stiffness to passive movements.

Chief Signs.—See page 546.

Neurosis (*"Hysteria"*).—*Characteristics*.—The limb is either rigid or flaccid, with no true muscular atrophy, no alteration in the muscular response to electrical stimulation, and never loss of the knee-jerk. Ankle-clonus and Babinski are likewise absent. The gait and attitude of the affected leg are different from those of an organic paralysis, the patient walking on the outer side of his foot with a stiff leg or dragging the flaccid limb behind him. While in bed the paralysis may not be marked.

Chief Signs.—Occurrence in females; morbid motor, sensory, and psychic phenomena, such as paralysis without wasting of the muscles, characteristic convulsive seizures, anesthesia or hyperesthesia, special sense palsies, suggestibility and emotionalism.

Carcinoma of the Spine.—*Characteristics*.—A crural monoplegia associated with acute pain of root distribution is an early symptom in some cases.

Chief Signs.—See page 604.

Tumor of the Spinal Cord.—*Characteristics*.—Spastic paralysis of one leg develops progressively, to be followed later, as a rule, by extension to the other leg. Anesthesia of the other leg is usually present (Brown-Sequard syndrome).

Chief Signs.—Period of pain, dull or shooting, in the leg; progressive paralysis, one limb first; motor and sensory paralysis below a fixed segmental line; absence of sphincter weakness until late; absence of signs of spinal caries or malignant disease of the vertebræ; spinal fluid examination (lemon-yellow color, increased globulin, may be pleocytosis).

Less Common Causes.—Cerebral hemorrhage; hematomyelia; cerebral abscess; spinal caries; tabes dorsalis; gumma of the cord; myelitis (unilateral); anterior crural (femoral nerve) neuritis; obturator neuritis; syringomyelia; progressive muscular atrophy (very early stage); idiopathic muscular atrophy (peroneal type); cerebral tumor.

PARALYSIS OF BOTH LOWER EXTREMITIES, SPASTIC OR FLACCID

(Paraplegia)

Paraplegia signifies partial or complete paralysis of both lower extremities, with or without part of the trunk, due, as a rule, to changes either in the brain, spinal cord, peripheral nerves, or the muscles themselves, though it may sometimes be functional. It is much more common than brachial diplegia. It may be either flaccid or spastic, usually the latter. In spastic paraplegia the reflexes are usually increased and there is no muscle wasting, while in flaccid paraplegia there is flaccid paralysis, with rapid muscular atrophy, loss of deep reflexes and sensation, and the reaction of degeneration. In children, delay in learning to walk is usually due to some general condition and should not be confused with paraplegia, since neither flaccidity nor rigidity are present.

Acute Transverse Myelitis (*Thrombocyphilitic; Infective*).—*Characteristics*.—Flaccid paralysis of the lower extremities is present if the lesion is a complete one, spastic if incomplete, the latter being more common. The onset is acute.

Chief Signs.—History and evidence of syphilis, infectious disease, or idiopathic;

acute onset; absent or increased deep reflexes (according to the type of paralysis); anesthesia or impairment of sensation below a definite level; abolition of the superficial abdominal reflexes; incontinence of urine; pain at the level of the lesion if accompanied by meningitis.

Spinal Syphilis (*Chronic Meningomyelitis*).—*Characteristics*.—There is usually paraplegia of a spastic type or only a mere clumsiness in walking. If the anterior horns become involved there is a flaccid type of paralysis with rapid atrophy of the muscles, loss of reflexes, and the reaction of degeneration. If limited to one side there is the picture of the Brown-Sequard syndrome.

Chief Signs.—History of infection (usually within five years); nocturnal pain in the back; pain in the root areas and paresthesias; retention of urine; impotence; partial anesthetics, often dissociated; increased deep reflexes; extensor plantar reflex; often signs of cerebral syphilis (cranial nerve palsies, etc.); positive Wassermann; spinal fluid examination (positive Wassermann, increased globulin, lymphocytosis, luetic curve).

Fracture-Dislocation of the Spine.—*Characteristics*.—When the cord is completely divided above the lumbar enlargement, there is absolute flaccid motor paralysis and complete sensory paralysis below the lesion with sphincter paralysis. In some cases there is temporary paralysis due to shock or edema of the cord. All degrees of injury are possible, and the extent of the paralysis depends upon the seat of the injury, the degree of compression, the amount of edema, extramedullary hemorrhage, inflammatory exudate, and secondary displacement of the bone.

Chief Signs.—History of injury; shock; local evidence of fracture (pain, swelling, tenderness, deformity, may be crepitus); evidence of interference with the functions of the cord, complete or incomplete; x-ray.

Tuberculosis of the Spine (*Spinal Caries; Pott's Disease*).—*Characteristics*.—Spastic paralysis may develop insidiously, though usually late, when there is tuberculosis of the cervicodorsal or dorsolumbar spine (compression myelitis).

Chief Signs.—Kyphosis; stiffness of the back; tenderness on percussion over the affected vertebræ; sometimes pain (girdle or root); insidious development of pressure symptoms (paraplegia, and if high, wasting of certain hand, shoulder, and arm muscles); some sensory impairment; later loss of sphincter control; evidence of tuberculosis elsewhere; x-ray.

Multiple Neuritis.—*Characteristics*.—Paralysis of the lower extremities of flaccid type is more frequent in alcoholic, diphtheritic, diabetic, and arsenic neuritis, in which it usually appears first in the lower extremities, accompanied by "foot-drop."

Chief Signs.—Onset with neuralgia, numbness, and tingling of the extremities; symmetrical distribution; loss of power, especially in the extensor muscles below the knee and elbow (wrist-drop and foot-drop); flaccid paralysis and wasting of the muscles; diminution of electric excitability or the reaction of degeneration; sphincters unaffected; presence of an etiological factor with special characteristics in each case.

Subacute Combined Degeneration of the Spinal Cord.—*Characteristics*.—In the first stage there is a slight spastic or ataxic paraplegia. This lasts several months. In the second stage, marked spastic paraplegia develops rapidly. In the third stage, flaccid paraplegia supersedes the spasticity.

Chief Signs.—Occurrence between forty-five and sixty-five; severe anemia. First stage of paresthesia. Second stage of spastic paraplegia with stiffness and cramps in the muscles of the legs; ataxia of the legs, hands, and arms; weakness of sphincter action; increased deep reflexes; extensor plantar reflex; absence of abdominal reflexes; loss of sensation up to a definite level. Third stage of flaccid paraplegia with loss of reflexes, loss of sphincter control, bed-sores, mental deterioration; negative spinal fluid throughout.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—**Characteristics.**—Spastic paraplegia is a frequent symptom; the motor affections vary in degree and extent, are often transitory, but tend to progress. The paresis or paralysis is, as a rule, one of the movements rather than of the muscles. The gait may be spastoparetic in character or spasto-ataxic.

Chief Signs.—Onset between fifteen and thirty years; marked remissions in the symptoms; increased deep reflexes with Babinski's sign; absent abdominal reflexes; transient amblyopia or diplopia; disturbances of the sphincters; numbness and tingling; emotionalism; intention tremor; nystagmus; scanning speech; optic atrophy and pallor of the temporal half of the disks (ophthalmoscopy).

Postdiphtheritic Paralysis.—**Characteristics.**—Flaccid paralysis may occur as a part of a general diphtheritic neuritis in which the palate, eyes, limbs, and occasionally the trunk, diaphragm, and intercostal muscles are involved.

Chief Signs.—Occurrence in the second or third week of convalescence from diphtheria; regurgitation of fluid through the nose; gradual development of paralysis; culture of the throat (*Klebs-Löffler bacillus*).

Spastic Paralysis of Infants (*Spastic Diplegia; Birth Palsy; Little's Disease*).—**Characteristics.**—Spastic paraplegia occurs in all degrees either as part of a generalized spastic weakness or alone. Paresis exists in all cases where rigidity is marked, but rigidity may exist without much motor weakness. When walking is possible the gait may be that known as scissors-gait.

Chief Signs.—Occurrence in infancy; spasticity and weakness of the lower extremities; mental defectiveness; ataxic and athetoid movements.

Pernicious Anemia.—**Characteristics.**—Paresis of the lower extremities may occur, either of spastic type with increased reflexes or of tabetic type with loss of the reflexes. (See Subacute Combined Degeneration of the Spinal Cord, above.)

Chief Signs.—Insidious onset usually between twenty-five and forty-five years; great weakness; gastro-intestinal disturbances; faintness; palpitation; dyspnea on exertion; edema of the feet; tingling and numbness of the feet or hands; may be symptoms of posterior or posterolateral sclerosis; loss of deep sensibility; blood examination (low red cell count, color index 1 plus, deformity of the erythrocytes, polychromatophilia, normoblasts, megaloblasts).

Spina Bifida.—**Characteristics.**—Complete paraplegia with paralysis of the bladder and rectum occurs in some cases of myelocoele and syringomyelocoele in the lumbosacral region, but is not seen in meningocele. Incomplete paralysis with escape of the bladder and rectum may occur if the tumor involves only the cauda equina.

Chief Signs.—Presence of a sessile tumor with a palpable bony fissure of the spinal column from birth, umbilicated at the center and with a large central cicatrix (meningomyelocoele); coexistence of hydrocephalus (syringomyelocoele).

Friedreich's Disease.—*Characteristics.*—Actual paralysis of the lower extremities occurs only late, but the disease commences in the leg with a slowly developing unsteadiness and incoördination in walking (irregular, clumsy gait with feet set far apart).

Chief Signs.—See page 21.

Tumor of the Spinal Cord.—*Characteristics.*—Spastic paraplegia develops sooner or later, generally one limb being affected before the other. The development of the motor paralysis goes hand in hand with the appearance of flexor spasm of the legs and impairment of sphincter control. Flaccid paralysis may develop later.

Chief Signs.—See page 624.

Pseudohypertrophic Muscular Paralysis.—*Characteristics.*—Actual paralysis occurs only late when atrophy is fully developed. There is, however, marked weakness in the lower extremities in the early stage as shown by the instability in walking and difficulty in rising.

Chief Signs.—See page 550.

Neurosis ("Hysteria").—*Characteristics.*—Flaccid or spastic paraplegia may occur, more frequently the latter. There is no true spasticity (no clonus nor Babinski), though the limbs may be held in a more or less stiff attitude.

Chief Signs.—See page 624.

Amyotrophic Lateral Sclerosis.—*Characteristics.*—Spastic paresis of the lower limbs develops and increases coincidently with the atrophic paralysis in the small muscles of the hands. Later, atrophic paralysis in the legs may develop.

Chief Signs.—Occurrence between twenty-five and forty years; insidious onset; wasting and weakness in the upper limbs with spasticity in the lower; deep reflexes greatly increased; fibrillary tremors; electrical excitability diminished; sensation normal; sphincters unaffected.

Syringomyelia (Spinal Gliosis).—*Characteristics.*—Spastic paraplegia is common, though rarely severe, from pressure on the pyramidal tracts.

Chief Signs.—See page 317.

Hereditary Spastic Spinal Paraplegia.—*Characteristics.*—The disease begins in the lower extremities with a characteristic spastic gait.

Chief Signs.—Occurrence in several members of the same family; onset between the seventh and fifteenth years of age; contractures; later may affect the upper limbs; absence of mental impairment.

Primary Ataxic Paraplegia (Posterolateral Sclerosis).—*Characteristics.*—Following an unsteadiness in the gait with weakness, there gradually develops a rigidity of the legs with marked incoördination from the outset.

Chief Signs.—Occurrence usually in middle-aged males; absence of history or evidence of syphilis; absence of ocular and sensory symptoms; more or less muscle spasm; ankle-clonus; sphincter disturbance; late mental deterioration.

Primary Lateral Sclerosis (Spastic Paralysis of Adults).—*Characteristics.*—Spastic paralysis is present. The legs are dragged or moved stiffly and with hesitation. The toes drag the ground and the knees touch or are even crossed when there is marked adductor spasm. Other forms of spastic paralysis should be excluded before making this diagnosis.

Chief Signs.—Occurrence in adults; gradual loss of power of the lower extremi-

ties with spasm of the muscles, unaccompanied by muscular atrophy; sensory disturbances, or other symptoms; later, weakness and stiffness of the arms.

Erb's Syphilitic Spinal Paralysis.—*Characteristics.*—Spastic paresis of the legs develops, but is rarely complete. The muscular rigidity is slight in proportion to the exaggeration of the deep reflexes.

Chief Signs.—Occurrence between twenty and forty years; history of syphilis; gradual onset; difficulty in walking; retention of urine; pain in the back; increased reflexes; ankle-clonus and extensor plantar reflex; some girdle pains; paresthesia, and loss of temperature sense; positive Wassermann.

Less Common Causes.—Malingering; hematomyelia; meningeal hemorrhage; cerebellar tumor; cerebellar abscess; general paresis (occasionally); acute ascending paralysis (Landry's disease); amaurotic family idiocy; aneurysm of the abdominal aorta; beriberi; botulism; caisson disease; cerebrospinal meningitis; juvenile muscular dystrophy; bilateral cerebral hemorrhage; lathyrism; ergotism; tabes dorsalis; malaria; Erb's syphilitic spinal paralysis; thrombosis of the superior longitudinal sinus; vertebral osteo-arthritis; pellagra; pelvic tumor; poisoning (by ammonia, arsenic, carbon disulphid, quicklime); progressive muscular atrophy (chronic anterior poliomyelitis); Tooth's peroneal type of muscular atrophy; acute poliomyelitis; concussion of the spinal cord; epidural spinal abscess; Korsakoff's syndrome; purulent spinal pachymeningitis; bilateral cerebral softening; wound of the spinal cord (complete transection).

ATROPHY OR WASTING OF THE WHOLE OR PART OF ONE LOWER EXTREMITY

Acute Anterior Poliomyelitis (*Infantile Paralysis*).—*Characteristics.*—Flaccid atrophy of one or more groups of muscles of the lower extremity (extensors of the leg, adductors of the thigh, anterior tibial group) is a frequent sequel of the disease. The affected limb remains small and short if many of the attached muscles are paralyzed. The initial paralysis is the maximum; all subsequent change is improvement. The latter may continue for twelve to eighteen months with only a part of the original paralysis remaining permanently. Improvement cannot be expected if not commencing within three months of the onset.

Chief Signs.—Occurrence in children; often epidemic; sudden onset with fever, malaise, vomiting, possibly convulsions; maximum flaccid paralysis present from the start, asymmetrical in muscular groups innervated by sections of the spinal cord affected (one leg or one leg and the opposite arm); reflexes absent in the affected limbs; cutaneous sensation normal; may be pain, often none; altered electrical response; duration of the initial stage two to three weeks, with constitutional symptoms for only a few days.

Sciatic Neuritis.—*Characteristics.*—In long-standing cases the nutrition of the affected leg suffers and the muscles appear generally smaller than those of the other limb; or there may be wasting of the parts only which are supplied by the great sciatic nerve, with the reaction of degeneration.

Chief Signs.—See page 603.

Tuberculosis of the Hip-Joint.—*Characteristics.*—As the disease progresses the muscles of the hip and thigh become atrophied.

Chief Signs.—See page 602.

Osteo-Arthritis of the Hip (*Morbus Coxæ Senilis*).—*Characteristics.*—Early wasting of the hip and thigh muscles occurs.

Chief Signs.—See page 602.

Tuberculosis of the Knee-Joint.—*Characteristics.*—Muscular atrophy becomes marked above and below the joint.

Chief Signs.—See page 608.

Less Common Causes.—Hemiplegia (atrophy of disuse); anterior crural paralysis (quadriceps); congenital asymmetry; disseminated sclerosis; myelitis (unilateral); obturator neuritis; multiple exostoses; pelvic tumor (involving one lumbar plexus); gonorrheal arthritis.

ATROPHY OR WASTING OF WHOLE OR PART OF BOTH LOWER EXTREMITIES

Both lower limbs naturally become atrophied as part of a general wasting in any prolonged wasting disease or severe illness. Atrophy of disuse will develop in patients who are unable to walk for a long period because of some injury. In such cases the cause is obvious and the reaction of degeneration not present.

Multiple Neuritis.—*Characteristics.*—Wasting of the muscles of the legs may be extreme (often the arms likewise), but the tendency is for slow recovery to ensue. The wasting is symmetrical and mainly below the knees. The muscles are flaccid and may give the reaction of degeneration, partial or complete.

Chief Signs.—See page 625.

Tooth's Peroneal Type of Progressive Muscular Atrophy.—*Characteristics.*—A slowly progressive atrophy of the muscles of the legs is present beginning in the small muscles of the feet. The reaction of degeneration is present in the muscles as they become affected.

Chief Signs.—Occurrence in children; familial tendency; often a history of preceding febrile disease; slowly progressive atrophy; inability to dorsiflex the big toe which hangs down (first sign); retention of ability to walk; reaction of degeneration.

Friedreich's Ataxia.—*Characteristics.*—There is no real wasting but rather a failure of development, so that the legs appear wasted.

Chief Signs.—See page 21.

Osteo-Arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics.*—Muscular atrophy in the neighborhood of the affected joint is common and may occur with great rapidity. The muscles of the legs are eventually extremely wasted and the joints very prominent. Contractures result.

Chief Signs.—See page 737.

Transverse Myelitis (*Syphilitic; Compression; Infective*).—*Characteristics.*—The muscles of the lower extremities are wasted only when the lesion is low down in the cord involving the lumbar enlargement (it is usually higher up in the dorsal region). There is then a flaccid paralysis with absence of the deep reflexes, reaction of degeneration, and rapid wasting of the lower extremities.

Chief Signs.—See page 620.

Tumor of the Cauda Equina.—*Characteristics.*—Gradual wasting of all the muscles of both legs except the flexors of the hip occurs, one leg usually being affected earlier.

Chief Signs.—May be presence of a pelvic tumor; pain in the region of the cauda; bilateral flaccid palsy; anesthesia and severe pains in the lower lumbar region, perineum, and legs; loss of the knee-jerk, and plantar reflex; sphincter paralysis; the reaction of degeneration.

Less Common Causes.—Acute anterior poliomyelitis (usually unilateral); tabes dorsalis; bilateral sciatic neuritis; progressive muscular atrophy (late).

NUMBNESS AND TINGLING IN ONE OR BOTH LOWER EXTREMITIES

Tabes Dorsalis (Locomotor Ataxia).—*Characteristics.*—Numbness and tingling, particularly in the feet, may be among the first symptoms, and may persist into the ataxic stage.

Chief Signs.—See page 619.

Neurosis ("Neurasthenia").—*Characteristics.*—Numbness with other paresthesiæ may occur, and when they do, neither the objective sensory loss nor the motor palsy is complete. This is common in the so-called traumatic neuroses.

Chief Signs.—See page 738.

Pernicious Anemia.—*Characteristics.*—Numbness and tingling in the extremities are common.

Chief Signs.—See page 626.

Intermittent Claudication.—*Characteristics.*—Tingling in the legs following exertion may occur.

Chief Signs.—Pain, cramp, weakness, and paresis of the legs following exertion; middle or advanced age; giddiness; thickened arteries; high blood-pressure; left ventricular hypertrophy; accentuated second aortic sound.

Endarteritis Obliterans.—*Characteristics.*—Numbness, cramps, and pain in the feet occur at night when the feet are on a horizontal plane.

Chief Signs.—Occurrence in advanced life; hardened arteries; cyanosis or dusky red color of the feet when dependent; weak or imperceptible pulsations of the dorsalis pedis arteries; pain on walking rather than standing; dry gangrene.

Multiple Neuritis.—*Characteristics.*—Tingling in the feet and hands together with neuralgic pains may precede the development of the neuritis for weeks or months (especially in the alcoholic form). After the neuritis develops the only sensory symptoms may be the numbness and tingling, although the sensory symptoms are very variable.

Chief Signs.—See page 625.

Raynaud's Disease (Symmetrical Gangrene).—*Characteristics.*—Numbness and tingling in the feet and hands occurs and may amount to actual pain.

Chief Signs.—See page 647.

Transverse Myelitis (Syphilitic; Compression; Infective).—*Characteristics.*—Numbness and tingling in the legs may be initial symptoms.

Chief Signs.—See page 620.

Sciatica.—*Characteristics.*—Numbness and even slight cutaneous anesthesia

may be found on the dorsum of the foot, in the distribution of the musculocutaneous branch.

Chief Signs.—See page 603.

Subacute Combined Degeneration of the Spinal Cord.—*Characteristics.*—Sensations of numbness and coldness in the distal parts of the limbs occur early, more severe and earlier in the feet than in the hands.

Chief Signs.—See page 625.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—Numbness over the limbs, upper or lower, and over the body and face, with various types of paresthesiæ, are common.

Chief Signs.—See page 626.

Tumor of the Spinal Cord.—*Characteristics.*—Subjective sensation of numbness corresponding to the paralyzed limb or limbs appears either with the onset of the paralysis or shortly afterwards.

Chief Signs.—See page 624.

Less Common Causes.—Myxedema; multiple neurofibromatosis; fecal impaction (sigmoid); spinal cord tumor (intramedullary); vertebral osteo-arthritis; vertebral caries; spinal meningeal hemorrhage; brain tumor; encephalitis; osteo-arthritis (multiple); syringomyelia; Landry's paralysis; tetany; cerebral hemorrhage; cerebral thrombosis; epilepsy (aura); Erb's syphilitic spinal paralysis; meralgia paræsthetica (outer side of the thigh); frost-bite (with return of the circulation); pernio (chilblain); urticaria; polycythemia; nephritis; ergotism; gout; erythromelalgia; caisson disease and divers' paralysis; menopause; acroparesthesia (more commonly affecting the hands); Buerger's disease.

PAIN IN THE LEG OR LEGS

(*Below the Knee*)

Abscess of the Leg.—*Characteristics.*—There is severe throbbing local pain.

Chief Signs.—Heat, swelling, redness, tenderness; induration; fluctuation; fever; aspiration (pus).

Acute Phlebitis.—*Characteristics.*—There is pain and tenderness along the course of the vein.

Chief Signs.—Veins palpable in hard, knotty cords; swelling of the leg; fever; may be mottling of the skin; may be varicosities.

Varicose Veins of the Leg.—*Characteristics.*—Aching pain and a sensation of heaviness often occur in the affected leg. If the veins become inflamed the pain becomes acute. Thrombophlebitis is more sore than painful.

Chief Signs.—Presence of elongated, distended, tortuous veins; edema, especially toward night.

Fracture of the Tibia or Fibula (or Both).—*Characteristics.*—Localized pain and tenderness are present, increased by motion and pressure.

Chief Signs.—History of injury followed by immediate loss of function, swelling, abnormal mobility, crepitus, deformity (not present in fracture of the fibula, present in fracture of the tibia, and most marked in fracture of both bones); x-ray.

Osteomyelitis of the Tibia.—*Characteristics.*—There is severe pain over the bone.

Chief Signs.—Chill; fever; may be delirium; redness and swelling of the skin; fluctuation; x-ray; incision (pus).

Intermittent Claudication.—*Characteristics.*—Sudden severe pain comes on with walking and disappears with rest. It is present in one or both limbs, generally in the calf muscles. The pain may be almost intolerable.

Chief Signs.—Age over forty; muscular weakness or complete disability after exertion; numbness and tingling; absent pulsation in the dorsalis pedis artery; sclerotic vessels; vasomotor congestion; may be myokymia (wormlike contractions of individual muscle bundles without any movement of the part); tendency to gangrene of the feet.

Thrombo-Angiitis Obliterans (Buerger's Disease).—*Characteristics.*—Some patients complain of rheumatic pains in the leg, others are able to walk only a short distance before the advent of paroxysmal, shooting, cramplike pains in the calf of the leg makes it necessary to stop. The pain is worse in cold weather.

Chief Signs.—Occurrence between twenty and forty, especially in Jews; numbness and coldness of the feet, with blanching unless quite warm; absence of arterial pulsation in the foot; later (months or years) rubor of the toes when the foot is pendant, ulceration of the toes with severe pain, dry gangrene (presenile gangrene).

Syphilis of the Bone.—*Characteristics.*—In the secondary stage osteoscopic pains occur if syphilitic periostitis develops. The site is often determined by trauma.

Chief Signs.—History and evidence of syphilis; resolution with node formation in the secondary stage; periostitis; thickening, suppuration, and caries in the third stage; osteitis.

Osteoperiostitis of the Tibia.—*Characteristics.*—Localized aching pain is present, worse at night and increased by pressure.

Chief Signs.—May be fever; swelling; redness, heat, pain; exquisite tenderness over the affected part; may be spindle-shaped swelling; x-ray; incision (pus).

Tuberculosis of the Bone.—*Characteristics.*—Indefinite aching or boring pain occurs, but no acute pain. There is local tenderness. The tibia is affected just below the knee.

Chief Signs.—Enlargement of the part affected; existence of concomitant tuberculosis; x-ray.

Sciatica.—*Characteristics.*—Severe neuralgic pain may radiate down the back of the thigh and outer side of the leg into the foot, over the entire distribution of the nerve.

Chief Signs.—See page 603.

Flat-Foot (Pes Planus).—*Characteristics.*—Pain on locomotion may extend from the foot up the leg or even the thigh.

Chief Signs.—Deformity of the foot, sinking of the inner arch; peculiar stiff gait; fatigue and pain on locomotion; examination (tracing on camphor soot paper).

Lymphangitis.—*Characteristics.*—Pain may be present along the lymphatic trunks of the leg.

Chief Signs.—History and evidence of infection; chills; fever; development of red lines along the lymphatics; enlarged lymph glands; swelling.

Multiple Neuritis.—*Characteristics.*—The sensory symptoms are very variable.

In some cases there are numbness and tingling only, without great pain. In others there are severe burning and boring pains in the legs and arms, the nerve trunks are sensitive, and the muscles are sore when grasped. Pain is perhaps most marked in alcoholic neuritis, and may also be severe in some cases of diabetic neuritis.

Chief Signs.—See page 625.

Sarcoma of the Tibia or Fibula.—*Characteristics.*—Dull, deep-seated, boring pain is usually present.

Chief Signs.—Progressive bony swelling beneath the knee which may crepitate; x-ray.

Acute Transverse Myelitis.—*Characteristics.*—Pains and cramps in the legs and thighs, sometimes of a severe character, may occur in the early stages from reflex spasm.

Chief Signs.—See page 624.

Tabes Dorsalis (Locomotor Ataxia).—*Characteristics.*—Periodic lightning pains are common in the legs; they are usually sharp, stabbing, paroxysmal, intense, and not definitely localized, though they tend to follow the dorsal root areas. They occur at irregular intervals, last only a second or two, and dart from place to place. They constitute one of the characteristic initial symptoms, and when typical are pathognomonic.

Chief Signs.—See page 619.

Rupture of the Plantaris Muscle (Tennis Leg).—*Characteristics.*—There is a sudden pain in the middle of the calf following exercise.

Chief Signs.—See page 614.

Less Common Causes.—Disease of the rectum, bladder, prostate, uterus; leukemia; Friedreich's ataxia; rupture of a deep varix; popliteal aneurysm; acute anterior myelitis; acute febrile polyneuritis; primary spastic paraplegia; cerebrospinal meningitis; encephalitis lethargica; anterior crural neuralgia; thrombosis of the iliac arteries.

VARICOSE VEINS OF THE LEG

Varicose veins occur in individuals who stand upon their feet for long periods. No other factor can be discovered in many cases, though an hereditary weakness of the walls of the veins may be assumed. Tight garters may be an additional factor.

Pregnancy.—*Characteristics.*—Varicose veins may assume considerable proportions in the legs or about the vulva or anus in pregnancy and may give rise to distressing symptoms. They may disappear during the puerperium but recurring pregnancies tend to make them permanent.

Chief Signs.—See page 502.

Pelvic Tumor.—*Characteristics.*—Varicose veins may occur from pressure upon the veins in the pelvis.

Chief Signs.—Presence of a pelvic tumor; hemorrhoids; varicocele or vulvar varix in addition to varicose veins of the leg.

Thrombophlebitis.—*Characteristics.*—Varicose veins may develop after an attack of acute phlebitis (usually of the saphenous vein), affecting chiefly the collaterals of the vein affected.

Chief Signs.—History of acute phlebitis; cordlike feel of the saphenous vein; edema of the leg after standing or walking.

Less Common Causes.—Fecal impaction (sigmoid); aneurysm of the abdominal aorta; abdominal tumor.

ULCERS OF THE LEG

(See also "Skin Affections of the Legs," page 635.)

Ulcers of the leg are usually marked by their chronicity and resistance to treatment, due probably to deficient circulation.

Varicose Ulcer (*Indolent, Chronic, or Callous Ulcer*).—*Characteristics.*—An oval, often painless, chronic ulcer is present, usually on the inner side of the leg about three inches above the ankle. It may be small or it may encircle the limb. It has sloping, hard and congested edges, and a smooth, glistening, dirty yellow floor with a few feeble granulations. It is firmly attached, and often surrounded by persistent edema, pigmentation, and induration of the skin. The discharge is often irritating and may cause eczema.

Chief Signs.—Presence of varicose veins; occurrence in the latter half of life.

Simple Chronic Ulcer.—*Characteristics.*—The ulcer is circular or oval, surrounded by congested, discolored, and indurated skin, the floor being uneven and usually covered by granulations, the edges being thick, turned out, and not sensitive to the touch. There is often eczema or brown pigmentation of the neighboring skin.

Chief Signs.—Absence of varicose veins; presence of an etiological factor, such as atheroma of the arteries, old age, exposure to cold, trauma, pressure, or some constitutional disease.

Syphilitic Ulcer.—*Characteristics.*—The ulcers are excavated, with a punched-out appearance, having sharply cut or undermined edges and a ragged base; they are circular, semicircular, or serpiginous in shape, and are often covered by thick crusts or a tough, adherent, dusty-yellow slough. They tend to heal in one place while they progress in another, and are generally multiple, tending to run into each other. The scars are thin and supple, and if in the lower part of the leg are usually pigmented around the edges, white and slightly depressed in the center. They are more common on the middle and upper thirds of the leg.

Chief Signs.—Presence of other signs of syphilis; positive Wassermann; therapeutic test.

Tuberculous Ulcer.—*Characteristics.*—The ulcer is very chronic and characterized by undermining of the skin for a considerable distance from the edge. The surface is pale, and its granulations very small, and here and there are small areas of caseation. The parts about the ulcer are livid and tender, and the discharge is thin and scanty.

Chief Signs.—History of a tuberculous abscess in the subcutaneous tissues or in the bone; presence of tuberculosis elsewhere; injection of Koch's old tuberculin; positive von Pirquet's skin test; biopsy.

Epithelioma.—*Characteristics.*—The epithelioma may develop in a simple or varicose ulcer. The ulcer spreads, the edges become heaped up, everted and indurated. If allowed to progress the bone is attacked.

Chief Signs.—Enlarged glands in the groin; biopsy.

Less Common Causes.—Acute or inflamed ulcer; rodent ulcer; sarcoma; leprosy; glanders; anthrax; elephantiasis, vagabonds' disease; erythema induratum; ecthyma.

SKIN AFFECTIONS OF THE LEGS

(See also "Ulcers of the Leg," page 634.)

Syphilis.—*Characteristics.*—Besides the ulcers of the gummata of tertiary syphilis, ecthymoid lesions of secondary syphilis may occur. The latter are depressed ulcers covered by crusts of varying thickness, which at times resemble oyster shells (rupia). Other syphiloderms occur as a part of a more or less general eruption.

Chief Signs.—See page 192.

Ecthyma.—*Characteristics.*—Flat yellow pustules appear in crops especially on the legs. They are surrounded by distinct red areolæ and soon dry up, forming reddish-brown crusts. Slight ulceration and pigmentation sometimes remain after the separation of the crusts.

Chief Signs.—Appearance usually in poorly nourished adults; acute onset; absence of deep ulceration, subjective phenomena, and of syphilis.

Psoriasis.—*Characteristics.*—Psoriasis is rarely limited to the legs. When it is present in this locality it usually shows itself in its sites of predilection, particularly the extensor surfaces of the elbows and knees.

Chief Signs.—See page 777.

Lichenification (*Neurodermite*).—*Characteristics.*—A lichenified plaque due to scratching is common upon the anterior and external part of the leg. There is an oval or irregular patch of darkened and thickened skin, the surface being divided into more or less elevated, triangular, or irregular flat papular areas, presenting a mosaic-like appearance and covered by the lesions of scratching.

Chief Signs.—Occurrence in neurotic individuals; itching; chronicity.

Lichen Planus.—*Characteristics.*—The lesions occur on the extensor surfaces, the most common site together with the flexor surface of the arms for the disease. Reddish papules varying in size from 1 to 5 mm. in diameter appear rather suddenly, often arranged in rows, but sometimes confluent. The papules are distinctly angular, become umbilicated, and later have a distinct purplish tint, shining by reflected light. Patches and semilunar lesions may occur.

Chief Signs.—Occurrence commonly in poorly nourished or neurotic adults; may be intense itching; chronic course.

Purpura.—*Characteristics.*—The number, dimensions, and intensity of color of the purpuric spots increase from above downwards on the lower extremity, becoming especially marked below the knee.

For causes of Purpura, see page 789.

Erythema Nodosum.—*Characteristics.*—Deep-seated nodules appear upon the tibial aspects of the legs that speedily grow in size and become elevated above the surface of the skin. They vary in size from one-half to three inches in diameter, are bright red in color, often with a purplish tinge, sharply circumscribed, and very tender. They may fluctuate, but suppuration never occurs.

Chief Signs.—Occurrence usually in young females; acute onset with constitutional symptoms (sometimes joint pains); duration rarely more than a month.

Erythema Multiforme.—*Characteristics.*—Macules, papules, vesicles, and more rarely bullæ, suddenly appear, usually upon the legs, hands, forearms, and face, and may be discrete or aggregate. The color varies from bright pink or red at first, to a violaceous or purple color later. The vesicular or bullous variety is commoner on the legs than elsewhere.

Chief Signs.—Acute onset with malaise, fever, rheumatoid pains, and headache; absence of itching; burning sensation; duration one to two weeks.

Erythema Induratum.—*Characteristics.*—Several subcutaneous nodules appear insidiously upon the outer or posterior aspects of the lower legs and gradually enlarge until they become from one-half to one-and-one-half inches in diameter. The skin above becomes purplish and soon firmly attached to the nodules. They may be absorbed or break down into deep, irregular ulcers.

Chief Signs.—Occurrence in young women who stand much; chronicity; absence of signs of syphilis.

Elephantiasis.—*Characteristics.*—This disease begins with recurring attacks of erysipelatoid inflammation. After each attack the part is left a little enlarged, until finally the skin is swollen, thickened, roughened, and pigmented, and the papillæ unusually prominent. The regions affected are the legs and genitals.

Chief Signs.—Occurrence more commonly in the tropics (but may occur anywhere); development usually in adult life; demonstration of lymphatic obstruction (neoplasm, infections, filariæ).

Less Common Causes.—Eczema (often due to varicose veins); alopecia; oriental button; papulonecrotic tuberculides; bromiderma; Schamberg's dermatosis; prurigo.

BOW-LEGS

Rickets (Rachitis).—*Characteristics.*—Bowling of the legs is present in most cases (knock-knees in others). It involves mainly the tibia but sometimes the femora. In more advanced cases the tibiæ and even the femora may be arched forward in addition to laterally. As the child begins to walk the deformity increases.

Chief Signs.—Insidious development beginning about the period of dentition; nocturnal restlessness; head sweating; constipation; enlarged abdomen; painful joints; epiphyseal enlargements; rachitic rosary; pigeon breast with Harrison's groove in the lower chest; spinal deformity; late walking; catarrhal conditions; tendency to tetanic convulsions; phosphaturia.

Chondrodystrophy Fetalis (Achondroplasia).—*Characteristics.*—The limbs are bowed and short and abnormally thickened where the muscles are attached. In contradistinction to rickets the bowing is late and more an exaggeration of the natural curve.

Chief Signs.—Dwarfish stature with normal trunk and short bowed limbs; large cranium with depressed nose and prognathous chin; trident hand; lumbar lordosis; normal sexual development.

Congenital Syphilis ("Saber Shin").—*Characteristics.*—A very characteristic

deformity is often produced, consisting of a forward curve of the anterior border of the tibiæ (saber blade shin). In some cases the bone is bent inward at its lower third resembling somewhat a rachitic curvature. Sometimes the entire shaft is enlarged, at other times the swelling is near the epiphysis.

Chief Signs.—History of syphilitic mother; deafness; painless, symmetrical, effusive arthritis, usually of the knees; may be palpable liver and spleen; may be mental deficiency; may be physical infantilism; may be dactylitis; positive Wassermann.

Osteitis Deformans (Paget's Disease).—*Characteristics.*—The legs become progressively bowed, often the arms likewise. This occurs, as a rule, in the sixth decade. The legs are bowed anteriorly and laterally.

Chief Signs.—Onset in middle life; bending and bulging of the long bones forward with loss in height (gradual); stooping with round shoulders; head held forward with chin raised; chest sunken toward the pelvis; abdomen pendulous; slow, awkward gait; may be pain; x-ray (fuzzy outline and thickening of the skull, changes in other bones, especially the long bones and the pelvis).

Less Common Causes.—Cretinism; fracture; mollities ossium (distortion); osteogenesis imperfecta; old osteomyelitis.

PAIN IN THE ANKLE

The conditions described below are also usually accompanied by swelling of the ankle.

Sprain of the Ankle.—*Characteristics.*—The amount of pain depends upon the severity of the sprain. Inversion of the foot causes the pain to be greater. The point of maximum tenderness is usually below and in front of the external malleolus.

Chief Signs.—History of preceding twist of the ankle, usually inward; impairment of function; early and extensive swelling; discoloration; x-ray to exclude fracture.

Pott's Fracture.—*Characteristics.*—Following an injury by direct force or twist of the foot there is severe pain in the ankle with immediate loss of function, accompanied usually by eversion and abduction of the foot.

Chief Signs.—Fracture of the fibula about three inches above the tip of the malleolus; fracture of the internal malleolus; rupture of the tibiofibular ligament; may be displacement of the foot upward and backward; great swelling, the ankle-joint being distended with blood; prominent internal malleolus; ankle-joint widened; the foot shortened from the tibia to the toes; crepitus; x-ray.

Acute Rheumatic Fever.—*Characteristics.*—Pain and soreness are present, increased by motion, and accompanied by stiffness, redness, and swelling. In the order of frequency of involvement of the joints the ankle is second only to the knee.

Chief Signs.—See page 736.

Tuberculosis of the Ankle-Joint.—*Characteristics.*—The pain is at first slight, but later when there is erosion of cartilage or bone severe pain may occur, especially during sleep, when the rigid muscles relax, permitting the joint surfaces to rub together.

Chief Signs.—Occurrence in childhood; muscle rigidity; spindle-shaped swell-

ing; white skin; doughy or elastic sensation on pressure; limitation of antero-posterior movements; "night cries"; presence of tuberculosis elsewhere; x-ray.

Osteo-Arthritis (*Arthritis Deformans; Chronic Rheumatoid Arthritis*).—*Characteristics*.—Pain, soreness, and stiffness are present, increased by damp weather and worse at night. Other joints are involved at the same time.

Chief Signs.—See page 737.

Gonorrheal Arthritis.—*Characteristics*.—The pain is usually moderate but may be severe.

Chief Signs.—See page 737.

Fracture of the Astragalus.—*Characteristics*.—Pain is present and the condition is usually considered a sprain.

Chief Signs.—History of direct violence or a fall on the sole of the foot; may be crepitus (obtained by rotating the foot while the heel is firmly held); swelling; loss of function; x-ray.

Less Common Causes.—*Tabes dorsalis*; dislocation of the ankle; acute suppurative arthritis; Still's disease; peliosis rheumatica; Henoch's purpura; hemophilia.

ANKLE-CLONUS

Ankle-clonus is a rhythmical contraction of the soleus muscle of the calf, resulting in a constant and regular series of to-and-fro movements at the ankle-joint at the rate of about seven per second, and continuing as long as pressure on the foot is maintained. It is best elicited when, the patient lying on his back with the knees slightly flexed, the examiner quickly but not violently dorsiflexes the foot, the hand being applied along its outer border in such a way as to keep it in a position of slight external rotation. Ankle-clonus indicates conclusively a lesion of the upper motor neuron, and is usually found in association with increased knee-jerks and the extensor plantar reflex. The production of a few ankle-jerks which gradually cease indicates only hypersensitiveness of the nervous system. The spurious ankle-clonus met with in "hysteria" is of this variety, not so regular nor maintained as the true clonus.

Spastic Paralysis.—*Characteristics*.—Ankle-clonus may often be elicited.

For causes of Spastic Paralysis, see Paralysis of Both Lower Extremities, page 624.

Hemiplegia.—*Characteristics*.—During the acute stage of hemiplegia, before the onset of early rigidity, there may be a stage of temporary flaccidity. Except during this stage the muscular tone is increased and with it the corresponding tendon reflexes, including ankle-clonus.

For causes of Hemiplegia, see page 314.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics*.—Ankle-clonus is most marked in this condition.

Chief Signs.—See page 626.

Cerebral Tumor.—*Characteristics*.—When the growth impinges on the motor area or pyramidal tracts, ankle-clonus may be obtained on the contralateral side. When there is considerable increase in the intracranial pressure the deep reflexes and ankle-clonus are increased on both sides.

Chief Signs.—See page 687.

Tumor of the Spinal Cord.—*Characteristics.*—Ankle-clonus may be present, first on one side, later on both, due to pressure of an intradural tumor on one or both pyramidal tracts.

Chief Signs.—See page 624.

PAIN IN THE FOOT OR TOES

While pain in the foot or toes is usually due to some local cause, there are certain referred pains which are not so easily recognized. Disease of the rectum, bladder, prostate, or uterus may give rise to pain and cutaneous tenderness in the heels or soles of the feet. A careful examination of the abdominal or pelvic viscera is necessary, therefore, in all cases of pain referred to the feet without obvious local cause.

Trauma and Burns.—*Characteristics.*—Trauma, burns, etc., causing wounds, blisters, abrasions, etc., will produce pain, the cause being obvious.

Chief Signs.—History of traumatism, irritation, or burn.

Cellulitis and Erysipelas.—*Characteristics.*—Intense pain is present in cellulitis, while a sensation of burning, tension, or stiffness without acute pain, occurs in erysipelas.

Chief Signs.—Rapidly spreading inflammation with great swelling, edema, dusky redness, and elevation of local temperature (cellulitis); irregularly spreading, bright red, shiny swelling with abrupt margins and local heat (erysipelas); fever; leukocytosis.

Flat-Foot (*Pes Planus*).—*Characteristics.*—Pain may be present, particularly after using the foot, is most marked in the sole or metatarsal joint, but occurs also in other portions of the foot, occasionally being reflected up the limb, even to the hip or lumbar region, and is sometimes associated with muscular spasm.

Chief Signs.—Loss of the normal flexibility of the foot; tenderness over the points of ligamentous attachment; shuffling gait; may be swelling; deformity, accentuated by standing, the inner border of the foot lengthened and resting on the ground, and the internal malleolus and head of the astragalus more prominent than usual; impress of the wet sole, giving a complete outline under the arch where normally it is absent.

Hallux Valgus (*Bunion*).—*Characteristics.*—In the simple cases there may be only a little dull pain. In other cases, especially those accompanied by periostitis or bursitis, the pain may be so great as to make walking very difficult. Tenderness is also present in inflamed cases. The pain is located on the inner side of the exposed and enlarged head of the first metatarsal bone.

Chief Signs.—Deformity with enlarged head of the first metatarsal bone, the big toe being deviated outward and lying either upon, or less often below, the second toe.

Chilblain (*Pernio*).—*Characteristics.*—There is a disagreeable sensation of burning and itching in the affected part, often the heel.

Chief Signs.—History of frost-bite; recurrence on slight exposure to heat or cold; pallor or lividity of the skin; may be blisters or ulceration.

Clavus (Corn).—*Characteristics.*—Pain is usually due to pressure, trauma, or inflammation.

Chief Signs.—Circumscribed hypertrophy of the epidermis with the projection into the skin of a horny plug of the same material, occurring on the dorsal surface of the toes (hard corn), or between the toes (soft corn).

Callus.—*Characteristics.*—Pain is present when a very hard callus, especially one upon the sole of the foot, is pressed upon the underlying sensitive skin.

Chief Signs.—Thickening of the epidermis without a horny plug.

Ingrowing Toe-Nail (Onychocryptosis).—*Characteristics.*—Pain is severe when the edge of the nail, usually that of the great toe, is buried in the inflamed or soft parts at the side of the toe, and is greatly increased by the least pressure.

Chief Signs.—History of wearing ill-fitting shoes; edge of the nail buried in redundant skin; may be an irritable ulcer and signs of inflammation.

Fracture of the Metatarsal Bones.—*Characteristics.*—Pain is present, increased by pressure against the head of the affected metatarsal, as well as by pressure directly upon the site of the fracture. If the head of the bone is grasped and manipulated, the pain is also increased.

Chief Signs.—History of direct violence; swelling and ecchymosis; may be crepitus; walking possible, bearing the weight on the heel; x-ray.

Fractures of the Phalanges.—*Characteristics.*—Pain in the toe is present, increased by movement.

Chief Signs.—History of direct violence; signs of fracture, usually compound.

Fracture of the Os Calcis.—*Characteristics.*—Pain and inability to bear weight on the heel are the outstanding symptoms.

Chief Signs.—History of a fall on the foot; increased bony thickness beneath the malleoli; tenderness on pressure; crepitus; x-ray.

Whitlow (Onychia; Paronychia).—*Characteristics.*—Throbbing pain is present in the region of the toe-nail affected.

Chief Signs.—Inflammation and pus formation beneath and around the semilunar fold and loosening of the nail.

Painful Heel (Pododynia; Policeman's Heel).—*Characteristics.*—Severe pain and tenderness are complained of on the under surface of the heel.

Chief Signs.—Occupation (standing); x-ray, revealing periostitis, flat-foot, bursitis, or exostosis (sometimes due to gonorrhea).

Osteo-Arthritis (Arthritis Deformans; Chronic Rheumatoid Arthritis).—*Characteristics.*—Pain is variable, often severe, increased temporarily by movements, and is worse at night. The joints of the feet are probably more affected in the acute or periarticular type.

Chief Signs.—See page 737.

Gout (Podagra).—*Characteristics.*—The attack sets in in the early morning hours with a severe pain in the metatarsophalangeal articulation of the big toe, more commonly on the right side than on the left (acute gout). The pain is agonizing and insinuates itself among the numerous small bones of the tarsus and metatarsus. The sensitiveness is extreme. The pain ameliorates during the day to recur the next night. In chronic gout, there may be pain, redness, and swelling of several joints without fever.

Chief Signs.—Recurring attacks of arthritis, limited to the big toe or tarsus, occurring in a member of a gouty family, or in a man who has lived too well; swelling, redness, and fever in the acute attack; later, involvement of other and larger joints; presence of tophi (toes, hands, ears); urinalysis (increased uric acid output at the height of the attack).

Hammer-Toe.—*Characteristics.*—Walking is painful and difficult due to corns or bursæ on the points exposed to pressure.

Chief Signs.—Characteristic deformity (hyperextension of the first, and flexion of the second and third phalanges).

Hallux Rigidus.—*Characteristics.*—Aching pain and soreness occur at the metatarsophalangeal articulation, which is the site of an arthritis terminating in ankylosis.

Chief Signs.—Ankylosis of the big toe.

Raynaud's Disease (*Symmetrical Gangrene*).—*Characteristics.*—Pains in the toes occur, or numbness and tingling. The pain may be so severe as to require morphia.

Chief Signs.—Symmetrical distribution (both hands or both feet or all); digits white and cold, or red and hot; aggravation in cold weather; may be symmetrical dry gangrene.

Erythromelalgia.—*Characteristics.*—Severe pain, aching and burning in character, is present in the foot, more or less continuous, with paroxysmal exacerbations, is aggravated by the dependent position of the limb and warm applications, and alleviated by elevation of the foot and cold applications or cold weather.

Chief Signs.—Pain in the extremity, usually unilateral; red patches, often about the ball of the big toe or along one edge of the foot; superficial and deep tenderness; a certain amount of edema in long-standing cases; may be gangrene.

Metatarsalgia (*Morton's Disease*).—*Characteristics.*—A paroxysmal neuralgic pain occurs, beginning on either side of the distal end of the fourth metatarsal bone, passing up the foot and often up the leg, and usually coming on when walking. There is tenderness on pressure over the metatarsus.

Achillodynia (*Postcalcaneal Bursitis or Albert's Disease, and Synovitis of the Tendo Achillis*).—*Characteristics.*—In the first variety there is a tender swelling between the os calcis and tendo achillis; in the second, pain and swelling are most marked at the level of the top of the shoe, and soft crepitus may sometimes be obtained on flexing or extending the foot.

Plantar Neuralgia.—*Characteristics.*—The pain may be limited to the tips of the toes or to the ball of the great toe, is paroxysmal, and may be associated with numbness, tingling, and hyperesthesia or sweating.

Chief Signs.—History of typhoid fever, or the presence of caisson disease; sensitiveness of the toes.

Less Common Causes.—Epiphyseal cyst; Kahler's disease; tabes dorsalis; perforating ulcer of the foot (slight or absent); movable kidney; "hysteroneurosis"; nephrolithiasis (renal calculus); sarcoma; acute rheumatic fever; tuberculosis of the foot; trench foot; gonorrheal arthritis; syphilitic dactylitis; tuberculous dactylitis; thrombo-angiitis obliterans.

ENLARGEMENT OF THE FEET

(See also "Bilateral Edema of the Lower Extremities," below; and "Edema of One Foot and Leg," page 644.)

Acromegaly.—*Characteristics.*—The feet are involved like the hands and are uniformly enlarged. The big toe, however, may be much larger in proportion to the rest of the feet.

Chief Signs.—See page 616.

Hypertrophic Pulmonary Osteo-Arthropathy.—*Characteristics.*—The bones of the feet (and hands) are symmetrically enlarged, together with enlargement of the distal ends of the long bones.

Chief Signs.—Occurrence in certain chronic diseases, particularly with affections of the lungs or bronchi; slow development; may be joint effusions; may be stiffness of the joints; sweating of the palms and soles; kyphosis or scoliosis.

BILATERAL EDEMA OF THE LOWER EXTREMITIES

Besides the diseases listed below there are many other conditions in which bilateral edema of the legs is met with. Any severe anemia which follows loss of blood from hemoptysis, hematemesis, postpartum and other hemorrhages may be accompanied by edema of the lower extremities. Cachectic states resulting from carcinoma, sarcoma, syphilis, tuberculosis, Hodgkin's disease, starvation, malaria and various other tropical infections may cause such an edema. Vasomotor paralysis following long confinement in bed will cause an edema of the legs for a period after the patient is first up and around. Elderly people may have an edema of the legs from paresis of the vasomotor system. Obesity, flat-foot, and other causes of deficient local circulation are other factors in the production of edema.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics.*—The edema usually begins in the feet and spreads upward. The edema is especially marked at night if the patient is on his feet most of the day. Pitting is most easily obtainable, when edema is slight, over the subcutaneous surface of the tibia.

Chief Signs.—Constant dyspnea or upon exertion; dizziness; precordial distress or pain; pulse usually rapid, feeble, or irregular; pallor; may be cyanosis; cough; oliguria; heart usually enlarged; poor muscle tone (heart); may be various murmurs and arrhythmias; may be liver enlargement or pulsation; may be ascites; usually a fall in blood-pressure; x-ray; electrocardiography.

Chronic Parenchymatous Nephritis (*Chronic Bright's Disease*).—*Characteristics.*—The edema usually begins in the face as a slight puffiness of the eyelids, especially in the morning. The feet may also be swollen in the morning. Later the edema spreads and becomes general (anasarca).

Chief Signs.—Nausea and vomiting; increased arterial tension with accentuation of the second aortic sound; diminution in the output of urine; albuminuria, cylindruria, hematuria; albuminuric retinitis (ophthalmoscopy); lowered kidney function (phenolphthalein test); high blood urea (blood chemistry).

Acute Parenchymatous Nephritis (*Acute Bright's Disease*).—*Characteristics.*

—At the onset there is puffiness of the eyes, feet, and ankles. Later the edema may become universal.

Chief Signs.—Onset rapid or insidious; headache; nausea and vomiting; fever; complexion pasty; skin dry; tongue furred; urine scanty; anemia; may be increased blood-pressure; urinalysis (deep or smoky colored, specific gravity 1.025 to 1.035, large amount of albumin, blood-cells, casts of all kinds, much debris); may be albuminuric retinitis (ophthalmoscopy).

Nephrosis.—*Characteristics.*—The edema is similar to that of chronic parenchymatous nephritis.

Chief Signs.—General edema; blood-pressure not increased; absence of anemia; no retinal changes; absence of nitrogen retention; absence of delayed phenolsulphonephthalein excretion; urinalysis (marked albumin, casts).

Pregnancy.—*Characteristics.*—Edema is a very frequent accompaniment of pregnancy, especially in the later months, from pressure exerted by the enlarged uterus upon the veins returning from the legs. If generalized, toxemia or acute nephritis should be suspected.

Chief Signs.—See page 502.

Abdominal Tumor (*Obstructing the Inferior Vena Cava*).—*Characteristics.*—Edema of the lower extremities may be extreme. It is usually limited to the legs and back with a definite upper level and there is no swelling of the eyelids or scalp. There may be distended veins of the abdominal wall with the current in them reversed.

Chief Signs.—Presence of a large abdominal tumor (see page 502).

Cirrhosis of the Liver (*Alcoholic*).—*Characteristics.*—Edema of the feet may precede or develop with the ascites. The dropsy is rarely general.

Chief Signs.—Occurrence in middle age; history of alcoholism; liver small or enlarged with surface hob-nailed or smooth; dyspepsia; hematemesis; slight or absent jaundice; ascites; hepatic facies; spleen usually palpable; venules along the costal margins; may be slight fever; later toxic symptoms.

Varicose Veins of the Leg.—*Characteristics.*—If both legs have varicose veins there will be edema, especially towards night. The swelling will be greater if the veins become inflamed (periphlebitis or thrombophlebitis).

Chief Signs.—See page 633.

Pernicious Anemia.—*Characteristics.*—Edema of the feet is common.

Chief Signs.—Insidious onset usually between twenty-five and forty-five years; great weakness; gastro-intestinal disturbances; faintness; palpitation; dyspnea on exertion; tingling and numbness of the feet or hands; may be symptoms of posterior or posterolateral sclerosis (loss of deep sensibility, spasticity); blood examination (low red-cell count, color index 1 plus, deformity of the erythrocytes, polychromatophilia, normoblasts, megaloblasts).

Chlorosis.—*Characteristics.*—Edema of the ankles and puffiness of the face may suggest nephritis.

Chief Signs.—Easy fatigue; shortness of breath; giddiness and faintness; palpitation; disturbances of menstruation; constipation; headache; cold feet; emotional instability; appetite variable and capricious; blood examination (hemoglobin markedly reduced, red cells about 4,000,000, color index under 1, may be change in the erythrocytes).

Multiple Neuritis (*Especially Alcoholic*).—*Characteristics*.—The feet and hands are frequently swollen and congested, particularly when held down for a few moments.

Chief Signs.—See page 648.

Ankylostomiasis (*Hookworm Disease*).—*Characteristics*.—Edema of the legs occurs, depending upon the degree of anemia.

Chief Signs.—Occurrence in Southern States; chronicity; anemia; weakness; emaciation; anorexia; perversion of the appetite; epigastric pain; "ground-itch"; eosinophilia; examination of the feces (revealing the ova and occult blood).

Myxedema.—*Characteristics*.—A bilateral swelling of the lower limbs is part of a puffy or edematous condition of the subcutaneous tissue. It is most marked in the face, hands, and lower limbs. The apparent edema does not pit on pressure, and the skin is thickened.

Chief Signs.—See page 697.

Trichiniasis.—*Characteristics*.—Edema, while appearing early in the face about the eyes, occurs later in the extremities when the swelling and stiffness of the muscles are at their height.

Chief Signs.—See page 660.

Milroy's Disease (*Persistent Hereditary Trophedema*).—*Characteristics*.—Both lower extremities may be edematous though the edema may first be limited to one leg.

Chief Signs.—See page 645.

Less Common Causes.—Angioneurotic edema; urticaria; splenic anemia; scurvy; leukemia; Hodgkin's disease; beriberi; aortic aneurysm; pseudoleukemia infantum; thrombosis of the inferior vena cava (usually extending upward from the veins of one leg); Raynaud's disease; erythromelalgia; bothrioccephalism; trypanosomiasis; chronic peritonitis; ovarian cyst; obstructed thoracic duct; retro-peritoneal sarcoma; essential dropsy of children; emphysema; cirrhosis of the lung; exophthalmic goiter; celiac disease; subacute combined degeneration of the spinal cord.

EDEMA OF ONE FOOT AND LEG

Varicose Veins of the Leg.—*Characteristics*.—Edema, especially toward night, in the affected leg is not uncommon. If the veins become inflamed (phlebitis, thrombophlebitis), there is a localized, tender, red, edematous swelling, in the center of which the inflamed vein or veins can be felt as thickened, hard cords.

Chief Signs.—See page 631.

Phlegmasia Alba Dolens (*Thrombophlebitis of the Femoral Vein*; "Milk Leg").—*Characteristics*.—Edema soon follows the onset, and usually begins in the foot and extends upward, although occasionally it appears first in the neighborhood of the groin. The leg becomes much swollen, the skin being tightly stretched and presenting a glazed appearance. At first pitting can be elicited only after prolonged pressure with the finger-tip.

Chief Signs.—Occurrence in the puerperium, after pelvic operations, or during infectious diseases; onset with pain in the leg (usually the left) along the course of one of the larger veins; sensitive, cordlike structure palpable just beneath Poupart's ligament if the femoral vein is implicated; more or less fever.

Cellulitis.—*Characteristics.*—Great swelling and edema may be present, associated with intense pain, dusky redness, and elevation of local temperature. The process may involve the whole extremity.

Chief Signs.—History and evidence of a wound; fever; pain on pressure; may be pus at the source of infection; may be gangrene; leukocytosis.

Acute Osteomyelitis.—*Characteristics.*—The limb soon becomes swollen and edematous. The adjacent joint is often swollen.

Chief Signs.—Sudden onset with chills and fever; thigh or leg swollen, tender, hot, and edematous; fluctuation if the abscess spreads from the bone; x-ray.

Pseudo-Elephantiasis (*Chronic Lymphatic Obstruction*).—*Characteristics.*—The skin and subcutaneous tissues are greatly thickened and do not pit on pressure, and the skin presents a coarse, corrugated surface, sometimes covered with lymphatic warts, which may ulcerate.

Chief Signs.—Presence of a causative agent of obstruction, viz., tumor, cicatrix, thrombolymphangitis, badly united fracture, previous operation (removal of lymph glands), chronic inflammation.

Elephantiasis (*Barbados-Leg*).—*Characteristics.*—The leg may be gigantic, due to blockage of the lymphatics by the *Filaria sanguinis-hominis*. There is marked hyperplasia of the subcutaneous tissues, the skin is coarse and corrugated, and there is no pitting on pressure.

Chief Signs.—Occurrence in the tropics; presence of the *Filaria* in the blood at night.

Milroy's Disease (*Persistent Hereditary Trophedema*).—*Characteristics.*—One lower extremity is usually affected first, although later both limbs are involved. There is a sudden demarcation between the swollen and the non-swollen parts at the level of the joint (ankle, knee, or hip). The swelling may cease at the ankle in the early stages, but may suddenly extend up to the knees and ultimately to the groin.

Chief Signs.—Occurrence in several members of a family; swelling limited to the lower extremities; may be periodic attacks of pyrexia and gastric disorder associated with increase in extent of the swelling; exclusion of other causes.

Less Common Causes.—Angioneurotic edema; gout; femoral aneurysm; popliteal aneurysm; dissecting aneurysm; epiphyseal cyst; erysipelas; carcinoma of the kidney; mycetoma; periostitis; stings; ligatures, bandages, and tight garters (compression).

ULCERS OF THE FOOT

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—Perforating ulcers of the foot form one of the special signs of tabes, and most frequently arise on the plantar surface at the base of the great or little toes. They commence usually as a corn, around which the patient complains of sharp, shooting pains. The corn becomes excoriated and a small, circular ulcer with irregular edges is formed, from which a serous or seropurulent discharge exudes. The ulcer itself is painless. The bone may be exposed and a sequestrum formed.

Chief Signs.—See page 619.

Suppurating Corn or Callus.—*Characteristics.*—When infection occurs due to

careless paring of the callus, an ulcer may form. The ulcer is small and deep and bounded by tough, thick, slowly growing skin.

Chief Signs.—History of a corn and careless treatment.

Diabetes Mellitus.—*Characteristics.*—Perforating ulcer is an occasional complication of diabetes, but gangrene is more common.

Chief Signs.—See below.

Less Common Causes.—Epithelioma; syphilitic gumma; syringomyelia; peripheral neuritis; spastic paraplegia; general paresis; leprosy; mycetoma (madura foot); beriberi; posterior tibial nerve injury.

GANGRENE OF THE TOES OR FOOT

Senile Gangrene (*Chronic or Pott's Gangrene from Obliterating Endarteritis*).—*Characteristics.*—The gangrene is often insidious in onset and confined at first to one lower extremity but later may be symmetrical. It begins as a little area of inflammation which usually ulcerates and then dries, forming a black slough, which gradually spreads as a dry gangrene into adjacent tissues. The surrounding tissues are inflamed, becoming purple and finally black as the process advances. A line of demarcation may form. Severe pain and marked exhaustion are often present, and if infection occurs, a fetid odor arises and symptoms of sepsis supervene.

Chief Signs.—Occurrence in patients of advanced years with extensive arteriosclerosis; prodromal symptoms of coldness, numbness, tingling, or cramplike pains, and sometimes intermittent claudication; feeble heart and impaired kidneys; feeble or absent pulse at the ankle.

Pressure Gangrene (*Bed-Sore*).—*Characteristics.*—In the foot this type of gangrene occurs principally upon the heel in bedridden patients, but it may affect any part of the foot exposed to prolonged pressure by the bed, splints, or bandages. The gangrene is usually superficial (slough), but may extend deeply and widely if there is sepsis. At first the part becomes red and blistered, and later sloughs.

Frost-Bite.—*Characteristics.*—In frost-bites of the second degree, reaction is attended with a livid color, considerable swelling, and the formation of blisters or blebs, and in the majority of these cases gangrene of the moist variety may follow.

Chief Signs.—History of exposure to cold, followed by numbness and anesthesia of the part.

Diabetes Mellitus.—*Characteristics.*—The gangrene begins at the toes with a blue discoloration which gradually extends upward. It may be dry if the arterial disease (obliterating endarteritis) is far advanced, but is much more likely to be of the moist variety and is then very often rapid in its progress. It is apt to be inaugurated by a slight wound. Such gangrene is not uncommon in a diabetic over fifty years of age with arterial disease.

Chief Signs.—Gradual onset; thirst, polyuria; enormous appetite; emaciation and weakness; boils, ulcers, and carbuncles; cataract; retinitis; glycosuria; hyperglycemia.

Traumatic Gangrene.—*Characteristics.*—When a foot is badly crushed, as by machinery or in a railway accident which destroys the tissues, it may putrefy unless removed and becomes affected with gangrene of the moist variety.

Presenile Gangrene (*Thrombotic Phlebo-Arteritis of Jews; Thrombo-Angiitis Obliterans; Judaische Krankheit; Buerger's Disease*).—*Characteristics*.—The character of the gangrene is the same as that in the senile type except that it occurs in younger individuals (twenty to forty years).

Chief Signs.—Occurrence chiefly in males of the Jewish race, affecting principally the feet; intermittent claudication, muscular cramps, and erythromelalgia preceding the appearance of the gangrene.

Raynaud's Disease (*Symmetrical Gangrene*).—*Characteristics*.—In severe types the terminal phalanges of the feet (or hands) may become dark, cold, and insensitive, and the tip of one toe (or finger), or the terminal joint of another, gets darker, a few blebs form, and the parts become necrosed. Both feet may be swollen to the ankles with the toes black. It may look as though both feet would become gangrenous, but, as a rule, the process subsides and only the tips of the toes are lost. It tends to recur.

Chief Signs.—Symmetrical distribution of the symptoms (fingers, toes, ears, nose); occurrence in attacks from mild to severe; three stages in the attacks: local syncope ("dead fingers or toes"), local asphyxia (blue, cold, painful), active hyperemia (red, hot, swollen, throbbing, painful).

Thrombosis and Embolism.—*Characteristics*.—If an embolus lodges or a thrombus forms in the femoral bifurcation, or the popliteal, and there is diminished vitality from associated disease, gangrene of the foot or leg may follow. The limb becomes suddenly bluish, swollen, edematous, and finally the seat of moist or occasionally dry gangrene.

Chief Signs.—Embolism: Sudden severe pain in the limb in a person with valvular disease of the heart. Thrombosis: Gradual onset with severe and protracted pain in a person with widespread arterial degeneration, phlebosclerosis, or local disease spreading to the vessel.

Malignant Edema (*Spreading Gangrene*).—*Characteristics*.—The gangrene begins in the margin of a wound and extends by a rapidly spreading cellulitis. It may follow trivial or extensive wounds. The tissues become greenish and finally black, but a line of demarcation does not form.

Less Common Causes.—X-ray (very rare in the feet); sarcoma of the toes; beriberi; erythromelalgia; glanders; leprosy; plague; snake poison; ligatures of the popliteal artery for aneurysm; tight bandages around the limb; ergotism (epidemic gangrene); anthrax; typhoid fever (femoral thrombosis); herpes zoster; malaria; leukemia; scarlet fever; smallpox; typhus fever; phenol (locally applied in dressings); syringomyelia (painless whitlow or Morvan's disease, much more common in the fingers); ainhum; peripheral neuritis; tabes dorsalis; burns; hospital gangrene.

REDNESS OF THE FEET

Chilblain (*Pernio*).—*Characteristics*.—The toes or heel become red and swollen following slight exposure to heat or cold. There is an itching and burning sensation.

Chief Signs.—History of frost-bite; recurrence; sometimes ulceration.

Raynaud's Disease (*Symmetrical Gangrene*).—*Characteristics*.—In the stage

of hyperemia the toes (or fingers) are red, hot, swollen, throbbing, and painful. Gradually there is a return to normal. All stages, white, blue, and red, are often simultaneously present in different toes (or fingers).

Chief Signs.—See page 647.

Erythromelalgia (*Red Neuralgia*).—*Characteristics.*—Local patches of cutaneous flushing follow, or sometimes precede the pain, and are often found about the ball of the big toe or along one edge of the foot. They are generally rose-pink, but may become purplish-red in severe paroxysms.

Chief Signs.—See page 641.

Syringomyelia.—*Characteristics.*—Among the trophic changes which occur in this disease are cutaneous symptoms of acute hyperemia, redness, and local elevations of temperature, persisting for several hours or days, and which may affect the feet.

Chief Signs.—See page 314.

Less Common Causes.—*Tabes dorsalis*; multiple sclerosis; Buerger's disease.

FOOT-DROP

Multiple Neuritis (*Acute Febrile, Alcoholic, Diphtheritic, Diabetic, Infective, Plumbic, Arsenical*).—*Characteristics.*—Both feet are "dropped" due to weakness of the dorsiflexors of the feet. The toes catch the ground in walking, giving rise to steppage gait. The degree of weakness may be out of all proportion to the discernible muscular atrophy. Wrist-drop frequently accompanies this condition.

Chief Signs.—Onset with neuralgia, numbness, and tingling of the extremities; symmetrical distribution; loss of power, especially in distal extensor muscles; flaccid paralysis and wasting of the muscles; diminution of electrical excitability, or the reaction of degeneration; sphincter unaffected; presence of an etiological factor with special characteristics in each case.

Infantile Paralysis (*Anterior Poliomyelitis*).—*Characteristics.*—Foot-drop occurs, usually on one side, if the residual paralysis affects the anterior tibial group of muscles. Marked atrophy of these muscles soon appears.

Chief Signs.—See page 628.

External Popliteal (Anterior Tibial) Nerve Injury.—*Characteristics.*—The ankle of the affected side cannot be flexed on the leg, neither can it be everted nor the toes extended. There is a tendency towards talipes equinovarus and later flexor contracture of the toes.

Chief Signs.—History of operation, pressure (bandages and splints), or traumatism in the region near the head of the fibula; anesthesia of the outer half of the anterior surface of the leg and dorsum of the foot.

Complete Transverse Myelitis (*Infective or Traumatic*).—*Characteristics.*—Bilateral foot-drop is present with paralysis of both lower limbs; when complete, flaccid motor paralysis develops.

Chief Signs.—See page 620.

Tooth's Peroneal Muscular Atrophy.—*Characteristics.*—At first the child is unable to bend the toes upward, following which there develops a permanent plantar flexion of the big toe, and, later, inability to extend the other toes. Eventually the patient cannot dorsiflex the ankles.

Chief Signs.—Onset usually before twenty-five years of age; familial and hereditary character; slow course; atrophy of the small muscles of the feet (peronei, extensor hallucis, extensor communis digitorum, later the gastrocnemii); may be a similar condition later in the hands; feet lengthened and inverted, toe pointed, leg wasted below the knee; may be talipes; fibrillary twitchings; incomplete re-action of degeneration.

Less Common Causes.—Sarcoma of the pelvis; carcinoma of the rectum; progressive muscular atrophy; lesions of the cauda equina; malignant and tuberculous disease of the sacrum; sciatic nerve injury (unilateral).

EVERSION OF THE FOOT

Pott's Fracture.—*Characteristics.*—The foot is everted, with displacement upward and backward. The internal malleolus is prominent, the ankle-joint widened, and the foot shortened, *i.e.*, from the tibia to the toes.

Chief Signs.—See page 637.

Fracture of the Neck of the Femur.—*Characteristics.*—The whole lower extremity is in a condition of helpless eversion.

Chief Signs.—See page 602.

Flat-Foot (*Pes Planus*; *Acquired Talipes Valgus*).—*Characteristics.*—The inner border of the foot is lengthened and rests on the ground, causing the foot to be everted.

Chief Signs.—See page 639.

Infantile Paralysis (*Anterior Poliomyelitis*).—*Characteristics.*—Eversion of the foot results from paralysis of the posterior tibial group of muscles.

Chief Signs.—See page 628.

Talipes Valgus.—*Characteristics.*—The foot is everted and abducted, with flattening of the sole, and may be combined with talipes equinus or calcaneus (see page 650.)

Less Common Causes.—Fracture of both bones of the leg; rickets; spastic paralysis; coxa vara; dislocation of the hip (anterior); iliopsoas abscess; iliopsoas bursitis; tabes dorsalis; slipped or spastic peroneus; synovitis of the hip; acute synovitis of the knee.

INVERSION OF THE FOOT

Dislocation of the Hip (*Posterior on the Dorsum Ilei*).—*Characteristics.*—The thigh is flexed, adducted, rotated internally, and shortened, and the knee of the affected limb lies above the knee on the sound side. These signs are most marked in the high dorsal dislocation.

Chief Signs.—See page 602.

Talipes Equinovarus (*Congenital or Acquired*).—*Characteristics.*—The foot is twisted and folded on itself so that the toes point inward, the heel being drawn up, and the patient walking upon the outer border or dorsum of the foot. If congenital, both feet are usually affected. If following anterior poliomyelitis, one foot only is affected.

Chief Signs.—See page 650.

Tuberculosis of the Hip-Joint.—*Characteristics.*—In the late stage, when the ligaments are softened and weakened, the limb is flexed, adducted, and inverted, the pelvis elevated on the diseased side and the lumbar spine convex toward the sound side.

Chief Signs.—See page 602.

Less Common Causes.—*Tabes dorsalis*; osteo-arthritis; pseudohypertrophic paralysis; slipped tibialis; spastic paraplegia; Tooth's peroneal type of muscular paralysis; fracture of the neck of the femur (rarely).

EXTENSOR PLANTAR REFLEX

(*Babinski's Sign*)

This is the most important of all cutaneous reflexes. It consists of a flexion of the smaller toes, a marked extension of the great toe, and sometimes a spreading in fanlike manner of the four smaller toes; and is obtained by slowly rubbing a blunt object along the sole of the foot from the heel to the toes or from side to side. This sign is elicited, however, physiologically in infancy up to the age of eighteen months. It is indicative of involvement of the pyramidal tracts. It is well to remember that in "hysteria," a pure Babinski is not present. When there is any doubt as to which way the great toe moves, the plantar reflex is seldom really extensor. The two following conditions are not diseases but only symptoms occurring in many diseases of the nervous system. These diseases are all given in compact form in other places and a repetition was deemed inadvisable.

Hemiplegia.—*Characteristics.*—On the paralysed side the plantar response is extensor in type, and the deep reflexes on that side become exaggerated as the spasticity begins (the superficial abdominal reflexes are impaired or abolished).

Chief Signs.—For causes of Hemiplegia, see page 314.

Spastic Paraplegia.—*Characteristics.*—In all types of spastic paraplegia, Babinski's sign is present.

Chief Signs.—For causes of Spastic Paraplegia, see Paralysis of Both Lower Extremities, page 624.

Less Common Causes.—Fracture of the skull; uremia; general paresis (after severe epileptiform seizures).

DEFORMITIES OF THE FOOT

Club-Foot (*Talipes*).—*Characteristics.*—There are several varieties of this deformity, single or combined. In *talipes equinus* (usually acquired) the result of paralysis of the extensor muscles, the patient walks on the toes and in the worst cases on the dorsum of the foot, the heel being drawn up. In *talipes calcaneus* (congenital or acquired) the foot is drawn upward and the patient walks on the heel. In *talipes valgus* there is abduction and eversion of the foot with flattening of the sole (met with in flat-foot). In *talipes varus* (seldom seen without equinus) there is adduction and inversion of the foot, the patient walking on the outer side of the sole. *Talipes equinovarus* is the commonest form of club-foot (usually congenital), and when bilateral is called "reel-feet." The heel is drawn up and

the foot folded on itself, so that the toes point inward and the patient walks on the outer border or dorsum. In talipes equinovagis (rarely congenital), the heel is raised and the patient walks upon the inner side of the foot. Talipes calcaneovarus is a combination of the calcaneus and varus. Talipes calcaneovagis is a combination of calcaneus and vagis and commonly follows infantile paralysis. These deformities are either congenital or acquired. Acquired club-feet may arise from paralysis from any cause: Anterior poliomyelitis, spasmodic affections of certain groups of muscles, cicatricial contraction of the soft parts following injury or disease, rupture of tendons or muscles, fractures about the ankle, epiphysitis, shortening of the lower extremity, prolonged fixation of the foot, or the improper application of a plaster cast.

Flat-Foot (*Pes Planus*).—*Characteristics*.—The inner border of the foot is lengthened and rests on the ground, and the internal malleolus and head of the astragalus are more prominent than usual. The deformity is quite obvious in well-marked cases, and is accentuated when the patient stands.

Chief Signs.—Pain in the sole and midtarsal joint after using the foot, sometimes reflected up the limb; loss of normal flexibility; tenderness over the point of ligamentous attachments; swelling; shuffling gait; increased width of impress of the weight-bearing portion of the sole.

Hollow-Foot (*Pes Cavus*).—*Characteristics*.—The arch of the foot is increased, raised, or hollowed out.

Chief Signs.—Wearing of short or ill-fitting shoes, or history of infantile paralysis; rarely history of existence from birth.

Friedreich's Disease.—*Characteristics*.—The deformity first seen is pes cavus, the foot being slightly dropped and foreshortened, the heel drawn up, the dorsum arched, and the toes hyperextended at the metatarsophalangeal joints. Overextension of the great toe is especially striking. The digital end of the foot is square. This deformity may be present before any considerable degree of unsteadiness or incoördination is noted.

Chief Signs.—See page 21.

Claw-Foot (*Paralysis of the Internal Popliteal Nerve*).—*Characteristics*.—The toes become flexed at the two distal joints and extended at the proximal joints.

Chief Signs.—History of nerve injury; difficulty in walking; loss of the power of rotation of the flexed leg inward; may be talipes calcaneus; anesthesia of the sole of the foot and outer surface and lower portion of the back of the leg.

Tetany.—*Characteristics*.—The feet are strongly extended during the carpo-pedal spasm, sometimes in a position of equinovarus. The first phalanges of the toes are flexed and the second and third rows are extended; the plantar surface is strongly arched and the dorsum of the foot is very prominent.

Chief Signs.—See page 685.

Less Common Causes.—Pseudohypertrophic muscular dystrophy (talipes equinus); Tooth's peroneal muscular atrophy (talipes varus or equinovarus).

DEFORMITIES OF THE TOES

Hammer-Toe.—*Characteristics*.—There is permanent hyperextension of the first, and flexion of the second and third phalanges.

Chief Signs.—Presence at birth in the congenital type; wearing of short shoes in the acquired form; presence of hallux valgus, talipes equinus, or pes cavus; may be paralysis of the interossei and lumbricales.

Hallux Valgus (*Bunion*).—*Characteristics.*—There is outward deviation of the great toe with enlargement of the head of the first metatarsal. The big toe lies above or less often below the second toe.

Chief Signs.—See page 639.

Hallux Rigidus.—*Characteristics.*—There is ankylosis of the big toe at the metatarsophalangeal articulation.

Chief Signs.—Flat-foot; defective shoes or injury; pain from arthritis.

Hypertrophy of the Toe.—*Characteristics.*—There may be marked congenital hypertrophy of one or more toes.

Twisted Nails (*Onychogryposis*).—*Characteristics.*—The nails are greatly thickened and grow out in a curve toward the outer margin of the foot.

Chief Signs.—Occurrence in the aged from long-continued pressure of pointed or short shoes.

Ingrowing Toe-Nail (*Onychocryptosis*).—*Characteristics.*—The edge of the nail, usually of the great toe, has grown downward into the flesh beneath, causing irritation, ulceration, or suppuration.

Chief Signs.—See page 640.

Supernumerary Toe.—*Characteristics.*—Supernumerary toes are occasionally encountered at birth.

Hypertrophy of the Nails (*Onychauxis*).—*Characteristics.*—The nails are hypertrophied in length, breadth, and thickness, and are often furrowed and yellowish or brownish. It may be congenital and sometimes occurs in syphilis and ichthyosis.

Less Common Causes.—Paralysis agitans (flexion spasm of the four smaller toes); hypertrophic pulmonary arthropathy; division of the internal plantar nerve; division of the internal popliteal nerve (toes flexed at the two distal joints, extended at the proximal); division of the external popliteal nerve.

GENERAL SYMPTOMS

GENERAL SYMPTOMS

SYMPTOMS	PAGE
Amnesia (Loss of Memory).....	658
Anasarca (General Dropsy).....	659
Appetite, Decreased (Anorexia)	660
Appetite, Increased (Polyphagia; Bulimia).....	661
Appetite, Perverted (Pica).....	662
Ataxia (Incoördination)	662
Atrophy, Muscular	665
Attitude, Abnormalities of (Posture When Standing).....	666
Blood-Pressure, High	668
Blood-Pressure, Low	669
Blood-Pressure, Differing on the Two Sides.....	671
Brittle Bones (Spontaneous Fracture).....	671
Cachexia	672
Chills or Rigors.....	673
Coma (Unconsciousness)	675
Constipation, Acute (Including Causes of Intestinal Obstruction).....	678
Constipation, Chronic	679
Contractures	682
Convulsions (Fits; Convulsive Seizures or Attacks).....	684
Cramps, Muscular	687
Crepitus (Crackling)	688
Cyanosis	689
Death, Sudden (Causes of).....	692
Decubitus (Posture in Bed).....	693
Delirium	694
Dementia	696
Development, Retarded (Physical or Mental).....	698
Diarrhea, Acute	700
Diarrhea, Chronic	702
Drowsiness, Somnolence, Stupor.....	707
Dwarfism and Infantilism.....	710
Dystocia (Difficult Labor).....	712
Edema, Circumscribed or Local.....	716

Emotions, Alterations of	718
Feces, Incontinence of	719
Flushings (Hot Flushes).....	721
Gait, Abnormalities of.....	721
Glands, Enlarged Lymphatic.....	725
Hiccough	726
Impotence	727
Insomnia (Sleeplessness)	728
Itching (Pruritus)	730
Jaundice (Icterus)	732
Joints, Pain in Multiple (Arthralgia).....	736
Mentality, Changes of.....	738
Movements, Athetoid (Athetosis; Mobile Spasm).....	745
Movements, Choreiform	746
Movements, Fibrillary (Myokymia; "Live Flesh").....	747
Movements, Myoclonic	747
Movements, Tremulous (Tremor).....	748
Nasal Voice	751
Obesity	752
Opisthotonos	753
Orthopnea	754
Pains, General	755
Pain, Unilateral	756
Sensation, Abnormalities of.....	756
Anesthesia (Hypo-Esthesia; Impaired Sensation).....	756
Hyperesthesia	759
Paresthesia	760
Sensations, Subjective, of Heat, Cold, Throbbing, Oppression, etc.	762
Shock and Collapse	763
Skin, Affections of	766
Erythema, General	766
Erythema, Local	768
Macules	770
Papules	771
Vesicles (Little Blisters).....	774
Bullæ (Large Blisters; Blebs).....	776
Scales	777
Pustules	779
Nodules or Tubercles.....	780
Crusts and Scabs.....	782

Wheals (Hivelike Eruptions)	783
Ulcers	784
Boils or Phlegmons	787
Skin, Pigmentation of	787
Skin, Hemorrhages into	789
Skin, White Patches on	792
Skin, Crackling on Pressure (Subcutaneous Emphysema)	793
Skin, Dryness of (Anidrosis)	793
Skin, Thickening or Induration of	794
Spasticity or Rigidity, General	795
Speech, Disturbances of	795
Stature, Tall	800
Sterility in the Female	800
Sterility in the Male	802
Stools, Blood in; and Passage of Blood per Anum (Melena; Occult Blood; Anorectal Bleeding)	803
Stools, Mucus in	806
Stools, Pus in	808
Sweating, Excessive Partial	809
Sweating, Excessive General (Hyperidrosis)	810
Syncope (Fainting Attacks)	811
Temperature, Abnormalities of	812
Temperature, Elevation over Ten Days (Prolonged Pyrexia)	813
Temperature, Recurring Attacks of Elevated (Recurring Pyrexia) ..	815
Temperature, Elevation above 106° F. (Hyperpyrexia)	816
Temperature, Subnormal (Hypothermia)	817
Thirst, Increased (Polydipsia)	818
Typhoid Status	819
Urination, Frequent (Pollakiuria)	819
Urination, Painful or Difficult	822
Urine, Blood in (Hematuria)	823
Urine, Diminution in Amount of (Oliguria and Anuria)	826
Urine, Incontinence of (Enuresis)	827
Urine, Increase in Amount of (Polyuria)	828
Urine, Retention of	830
Vertigo (Dizziness; Giddiness; "Swimming in the Head")	831
Weakness (Loss of Strength)	833
Weight, Loss of	836

AMNESIA*(Loss of Memory)*

Severe toxemic states such as occur in many infective diseases may be followed by amnesia covering a varying part of the illness and which may be permanent. Alcoholic intoxication is often accompanied by amnesia. The same is true of many lethargic, confusional, or comatose states in which amnesia is due to a toxic factor.

Senile Dementia.—*Characteristics.*—Memory is impaired and it is the rule to find that recent events are lost before those belonging to distant years. Even when memory is obliterated almost completely, a few isolated events in the past may be recalled distinctly without their surroundings and may take a prominent place in the patient's personality. These traits especially characterize senility but are also to be found when looked for in other demented states.

Chief Signs.—Signs of age in wasted muscles, wrinkled inelastic skin, raucous voice, arcus senilis; hardened arteries; emotional poverty; delusions; tremors.

Arteriosclerotic Dementia.—*Characteristics.*—There is progressive loss of memory with concomitant mental deterioration to which are added the evidence of focal lesions, the result of thrombotic softening.

Chief Signs.—Nervousness; irritability; headache; dizziness; insomnia; growing inefficiency; absence of normal emotional reaction; periods of confusion and bewilderment with disorientation; preservation of the nucleus of personality; speech disturbances; paralysis; epileptiform attacks; signs of arteriosclerosis.

Dementia Præcox.—*Characteristics.*—The disturbances of memory and orientation observed in dementia præcox accompany the withdrawal of the patient from reality and the turning of his interests within; they are due, therefore, to lack of interest and attention. The patient who is heedless of his surroundings may easily not know the day of the week or may have forgotten the events that only recently took place about him because they are not sufficiently attended to to make any profound impression; and a patient who identifies himself with some great public functionary might easily not give the correct day of his own birth.

Chief Signs.—Splitting of the personality resulting in bizarre psychological modifications; autistic thinking or introversion, resulting in withdrawal from reality; emotional dullness; displacement of the affect from the constellation of ideas to which it normally belongs; failure of voluntary attention; lack of interest; shallowness of thinking; dilapidation of thought; delusional formations; hallucinatory experiences; mannerisms; negativism or rigidity (catatonia).

General Paresis (*General Paralysis of the Insane; Dementia Paralytica*).—*Characteristics.*—Memory and retention soon commence to show defects. Memory of time relations gradually slips away. In later stages all sense of time may be effaced.

Chief Signs.—See page 100.

Epilepsy.—*Characteristics.*—All memory of the epileptic seizure is lost. In some cases the amnesia may cover a period antecedent to the attack (retrograde amnesia), while in others actions performed after the attack may not be remembered (anterograde amnesia). As intellectual deterioration progresses permanent amnesia may develop.

Chief Signs.—See page 684.

Korsakoff's Syndrome.—*Characteristics.*—Loss of memory for recent events is marked, with loss of appreciation of time and place. Pseudoreminiscences are common.

Chief Signs.—History of chronic alcoholism; polyneuritis, mild or severe (foot-drop and wrist-drop).

Head Injuries (*Concussion*).—*Characteristics.*—Incomplete amnesia may develop preceding or following a period of unconsciousness.

Chief Signs.—History of head injury; may be chronic headache or epileptic seizures.

Less Common Causes.—Apoplexy; bromidism; cocaineism; meningeal hemorrhage; hydrocephalus; "hysteria"; chronic meningitis; multiple neuritis; myxedema; neurosis; shell-shock; cerebral thrombosis; cerebral tumor (especially of the temporo-sphenoidal lobe).

ANASARCA

(*General Dropsy*)

(See also "Edema, Circumscribed or Local," page 716.)

Anasarca is very rare except in the conditions given below, the first two of which may, of course, complicate many diseases. A generalized slight edema sometimes occurs in anemic girls between fifteen and twenty years of age, often in association with gastric symptoms, especially persistent vomiting after meals, and with constipation. Similar cases sometimes occur in infancy and childhood and in some may follow severe gastro-enteritis. Only in very few cases does uncomplicated heart-failure cause a general edema (anasarca) and then usually near the end. Myxedema must not be confused with anasarca, as in the former the tissues do not pit on pressure.

Chronic Parenchymatous Nephritis (*Chronic Bright's Disease*).—*Characteristics.*—Dropsy is a marked and obstinate symptom. It is general, and there may be involvement of the serous sacs. The face is pale and puffy and in the morning the eyelids are edematous.

Chief Signs.—Headache; nausea and vomiting; increased arterial tension with accentuation of the second aortic sound; diminution in output of urine; albuminuria, cylindruria, hematuria; albuminuric retinitis (ophthalmoscopy); lowered kidney function (phenolphthalein test); high blood urea (blood chemistry).

Acute Parenchymatous Nephritis or Acute Exacerbation of the Chronic Form (*Acute Bright's Disease*).—*Characteristics.*—General edema is an early and marked symptom. Effusion may also take place into the pleura and peritoneum. The edema is first noted in the face and eyelids.

Chief Signs.—Onset rapid or insidious; headache; nausea and vomiting; fever; complexion pasty; skin dry; tongue furred; urine scanty; anemia; may be increased blood-pressure; urinalysis (deep or smoky color, specific gravity 1.025 to 1.035, large amount of albumin, blood-cells, casts of all kinds, much debris); may be albuminuric retinitis (ophthalmoscopy).

Chronic Nephrosis.—*Characteristics.*—The outstanding feature is the per-

sistent edema. It usually begins in the face and rapidly involves the subcutaneous tissues of the whole body, the external genitals, and the serous cavities, though there may be a general edema without hydrothorax and ascites, or hydrothorax and ascites without the generalized edema.

Chief Signs.—Presence of a septic focus; blood-pressure not increased; absence of anemia; no retinal changes; absence of nitrogen retention; absence of delayed phenolsulphonephthalein excretion; urinalysis (marked albumin, casts).

Trichiniasis.—*Characteristics.*—About the end of the fourth week as the embryos begin to encyst in the muscles, edema appears. It is often marked in the face, with less marked edema of the abdomen and extremities. The genitals often escape.

Chief Signs.—History of eating pork and of others affected; onset with abdominal pain, vomiting, and often diarrhea; fever of remittent or intermittent type (seventh to fourteenth day); muscles swollen, hard, tender; cough and dyspnea; aphonia; emaciation; anemia; eosinophilia and leukocytosis; duration, two to eight weeks; examination of suspected food for larvæ of the trichina; examination of the feces for parasites; biopsy.

Less Common Causes.—Angioneurotic edema; ankylostomiasis; idiosyncrasy to potassium iodid and aspirin; snake-bite; cirrhosis of the liver (terminal); cirrhosis of the lung (terminal); emphysema (terminal); amyotonia congenita; beri-beri; Buhl's disease; glanders; chronic adhesive pericarditis; polymyositis; multiple neuritis; excessive beer drinking; fatal erythroblastosis; alkalosis in infants (from administration of soda).

APPETITE, DECREASED

(Anorexia)

The appetite is diminished in most acute febrile diseases and chronic infections. Anorexia may also be present in debilitating and wasting diseases. Anemia from any cause, primary or secondary, may be accompanied by anorexia. The loss of appetite due to worry, anxiety, grief or suspense is a familiar form. It may also arise from too long continuance of an insufficient dietary, as seen in chronic dyspeptics who practice self-prescribed abstinence or restrictions.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—Gastro-intestinal symptoms may overshadow the pulmonary symptoms at the onset of the disease. Anorexia is not uncommon in the beginning and may persist until the end. As a general rule it can be said that the chances of recovery are very poor if the patient cannot eat because of marked anorexia or because the least thing upsets the stomach. In spite, however, of extensive disease of the lungs and marked symptoms, some patients continue to have a good appetite and digest their food without discomfort.

Chief Signs.—See page 412.

Carcinoma of the Stomach.—*Characteristics.*—Anorexia is a frequent and valuable symptom, more common perhaps than any other. It may be strikingly associated with nausea, and there is often a sudden repulsion at the sight of food. There may be a particular distaste for meat. In exceptional cases the appetite is retained throughout.

Chief Signs.—See page 494.

Chronic Alcoholism.—*Characteristics.*—The appetite is usually impaired and there may be an actual aversion to food.

Chief Signs.—See page 685.

Chronic Gastritis.—*Characteristics.*—Diminution of appetite is almost constantly present except in the acid form.

Chief Signs.—See page 495.

Chronic Constipation.—*Characteristics.*—Loss of appetite is often complained of, especially in atonic constipation.

Chief Signs.—See page 32.

Psychosis (*Manic-depressive Psychosis, Depressive Phase; Catatonia*).—*Characteristics.*—Physically there is almost invariably present constipation, coated tongue, indicanuria, poor appetite, loss of weight, with disturbed sleep and poor circulation, with cold and often blue extremities. In catatonia the patient absolutely refuses to eat.

Chief Signs.—See page 719.

Neurosis (*Anorexia Nervosa*).—*Characteristics.*—An actual antagonism to food may exist, such that the appearance of food may induce a spasm. Dyspeptic symptoms may be associated. Food is either not taken at all or only upon urgent compulsion.

Chief Signs.—See page 738.

Less Common Causes.—Atony of the stomach; linitis plastica; arsenic poisoning; acute gastritis; abscess of the liver; cancer of the liver; empyema; lead poisoning; mercurial poisoning; myxedema; chronic peritonitis; chronic interstitial nephritis; uremia; achylia gastrica; gastropstosis; carcinoma of the intestine; Addison's disease.

APPETITE, INCREASED

(*Polyphagia; Bulimia*)

Bulimia or excessive hunger usually comes in paroxysmal attacks which may begin suddenly at night, the patient waking with a feeling of faintness and pain, and an uncontrollable desire for food. Sometimes the attack occurs immediately after a large meal, and may be relieved by a small amount of food or enormous quantities may be consumed. The appetite is increased in convalescence from all wasting febrile diseases.

Diabetes Mellitus.—*Characteristics.*—When fully established, the disease may be accompanied by a voracious appetite and, as a rule, the digestion is good. In spite, however, of the enormous quantity of food that may be consumed the patient may become rapidly emaciated.

Chief Signs.—See page 646.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics.*—The appetite is often increased, the rapid tissue waste calling for increased intake of food.

Chief Signs.—See page 288.

Hyperchlorhydria (*Hyperacidity*).—*Characteristics.*—Increase of appetite sometimes occurs, in which case the general condition may be well maintained,

though usually there is pain or discomfort in the later period of digestion, relieved temporarily by taking more food.

Chief Signs.—Excess of hydrochloric acid after a test meal; x-ray study and exclusion of organic disease.

Neurosis.—*Characteristics.*—All varieties of appetite are seen. There may be an absence of the sense of satiety (akoria), the patient always feeling “empty.”

Chief Signs.—See page 738.

Less Common Causes.—Intestinal parasites; chlorosis; dilatation of the stomach; epilepsy; psychosis; ergotism; gastralgia; chronic gastritis; gastrosuccorrea; iodism; pregnancy; cerebral tumor; cerebral softening; ulcer of the stomach; whooping-cough; hyperinsulinism (hypoglycemia); overdose of insulin; idiocy.

APPETITE, PERVERTED

(*Pica*)

This may be met with in nervous anemic children in whom it often takes the form of dirt-eating. The insane are particularly prone to swallow miscellaneous objects, such as hair, pins, needles, nails, and anything that may be at hand.

Pregnancy.—*Characteristics.*—Occasionally the appetite of the pregnant woman becomes very capricious, and she may evince an almost unconquerable desire for peculiar and sometimes revolting articles of food.

Chief Signs.—See page 502.

Ankylostomiasis (*Hookworm Disease*).—*Characteristics.*—The appetite is characteristically perverted in the severe case, with loss of appetite for ordinary articles of diet; the patients eat dirt, paper, chalk, starch, hair, and clay (dirt-eaters of the Southern States).

Chief Signs.—See page 644.

Chlorosis.—*Characteristics.*—The appetite is capricious, and there is often a longing for unusual articles of diet, particularly acids. In some instances the patients eat all sorts of indigestible things, such as chalk or even earth.

Chief Signs.—See page 643.

Idiocy.—*Characteristics.*—Abnormal articles may be eaten.

Chief Signs.—See page 41.

ATAXIA

(*Incoördination*)

Every coördinated action involves contraction, not only of the so-called prime movers, but of their antagonists, and if these two groups are not properly balanced, the attempted movement is awkward and jerky. This condition occurs in a number of diseases and is termed ataxia or incoördination. Ataxia, therefore, means clumsiness, unsteadiness, or awkwardness in the performance of movements in a non-paralyzed patient who was previously able to make these movements normally. In the newborn child ataxia is normal in the limbs and only disappears after long practice in the use of muscles, by which these actions become coördinated.

In testing for ataxia a great variety of means are employed, but in all of them the idea is to prescribe an action which shall require the coördinate use of various muscles for its performance, and by which clumsiness, unsteadiness, or awkwardness may be made apparent. Of these may be mentioned Romberg's test, picking up a pin or small object, lifting a glass of water to the lips, touching the tip of the nose with the index finger, buttoning the coat or collar, writing with a fine-pointed pen, walking along a straight line, placing one heel on the opposite knee, tracing a circle on the floor with the foot, touching the examiner's hand or finger, etc. In every case it is also to be determined whether the unsteadiness is increased or unchanged when the patient shuts his eyes.

Ataxia is often a symptom of great diagnostic importance, but before its value as a localizing sign can be utilized it is necessary to appreciate broadly the physiological mechanism by which coördination is brought about. For the proper coördination of voluntary movement, impulses from the muscles, tendons, joints, and skin of the part which is moved must reach the brain. These impulses are of two kinds: (1) sensory afferent impulses carried to the brain; (2) non-sensory afferent impulses carried to the cerebellum. There are, therefore, two great categories of ataxia: cerebral and cerebellar. If the ataxia is cerebral and due to loss of sensory impulses, it will be increased by loss of visual impulses brought about by closing the eyes. If the ataxia is cerebellar, it will not be influenced by closure of the eyes. Interference with the passage of impulses necessary for the proper coördination may be provoked, therefore, by lesions in the peripheral nerves, spinal cord, brain stem, cerebrum, or cerebellum. In states of fatigue a temporary ataxia may be present.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics*.—The ataxia is well shown in the gait. When walking, the tabetic, owing to want of joint sense, throws the limb up with abnormal suddenness to an unnecessary height to gain sensation of flexion. He then stamps it down with excessive emphasis to be sure of its extension. Romberg's sign is present when the eyes are closed. Accurate movements of the hands and feet are impossible without the aid of vision, hence the tabetic under these circumstances cannot touch the tip of the nose with the index finger nor the knee with the opposite heel.

Chief Signs.—See page 619.

Friedreich's Ataxia (*Hereditary Ataxia*).—*Characteristics*.—Unsteadiness and incoördination are present from the start, and result in instability both in standing and walking, which may cause frequent falls. The gait is irregular, the feet are set far apart and the movements are clumsy. Eventually the incoördination affects the arms and trunk, and walking becomes impossible. The ataxia is not increased when the eyes are closed.

Chief Signs.—See page 21.

Multiple Sclerosis (*Insular Sclerosis; Disseminated Sclerosis*).—*Characteristics*.—Ataxia is one of the most striking signs, where unsteadiness of the limbs is often associated with a coarse tremor. The gait is often a spastic-ataxic gait, in which stiffness is combined with incoördination.

Chief Signs.—See page 626.

Acute Alcoholism.—*Characteristics*.—Ataxia shows itself in the staggering gait and incoherent speech.

Chief Signs.—See page 37.

Hemiplegia.—*Characteristics.*—Sometimes ataxia of the limbs precedes an attack of hemiplegia, especially in threatened softening from arterial thrombosis. More often the ataxia appears during convalescence from a slight hemiplegic attack, when the patient has to learn the process of coördination again in his paretic limbs.

Chief Signs.—For causes of Hemiplegia, see page 314.

Pernicious Anemia (*With Subacute Combined Degeneration of the Spinal Cord*).—*Characteristics.*—At first the ataxia resembles that of tabes but with increased knee-jerks and extensor plantar reflexes. Later, spasticity is added, and finally this condition changes to one of flaccid paraplegia with loss of the knee-jerks but retention of the plantar extension reflex.

Chief Signs.—See page 643.

Multiple Neuritis (*Peripheral Neuritis*).—*Characteristics.*—The gait is unsteady, and the legs are held apart, while the clumsiness of the upper extremities is demonstrated in the usual way (finger-to-nose, or finger-to-finger tests). There is a tendency to the high-steppage gait. The ataxia is increased when the eyes are closed. This ataxia is, of course, present only in the less severe cases of neuritis (alcoholic and diphtheritic) in which some voluntary movement is possible.

Chief Signs.—See page 648.

General Paresis (*General Paralysis of the Insane; Dementia Paralytica*).—*Characteristics.*—Some degree of incoördination of movement is frequently combined with tremor of the outstretched hands, and in taboparesis, where the disease commences with the symptoms of tabes, a positive Romberg is present.

Chief Signs.—See page 100.

Cerebellar Tumor.—*Characteristics.*—Ataxia is more or less characteristic. It is present in the homolateral musculature and is not increased on closure of the eyes, being present only during the performance of a movement. In the finger-nose test, for example, the ataxic deviation of the finger is marked at the outset but becomes less prominent towards the end of the act and finally ceases. The ataxia is more marked in the trunk and lower limbs.

Chief Signs.—See page 832.

Neurosis.—*Characteristics.*—Ataxia of the most varied types may be met with. Sometimes "hysterical" ataxia is associated with anesthesia of the affected limb, occurring when the eyes are closed. The ataxia is not associated with any objective evidences of organic diseases.

Chief Signs.—See page 738.

Less Common Causes.—Cerebrospinal syphilis (positive Romberg); hereditary cerebellar ataxia; cerebellar encephalitis; senile cerebellar cortical atrophy; organic monoplegia; chorea; syringomyelia; ataxic paraplegia; labyrinthitis; hypertrophic interstitial neuritis (family type); spinal cord tumor; olivopontocerebellar atrophy; thalamic syndrome; lesions of the red nucleus and rubrospinal tract; thrombosis of the inferior cerebellar artery (hemiataxia of the homolateral limbs); cerebellar abscess; cerebral tumor (positive Romberg); occupation neuroses; acute diffuse myelitis; infantile hemiplegia.

ATROPHY, MUSCULAR

(See also under different regions for local atrophies.)

Muscular atrophy is often merely part of a general wasting in many acute and chronic diseases (see Weight, Loss of, page 836). The general muscular system will also be atrophied in bedridden patients from disuse, with or without the concomitant occurrence of organic disease of the nervous system (tabes, general paresis, etc). Local atrophy may result from disease of the parts beneath, as in active pulmonary tuberculosis, in which the muscles overlying the diseased area of lung are wasted. Similarly local atrophy occurs when the joints are diseased (arthritides, tuberculosis), especially in the muscles whose origin is above the affected joint. Again, fractures, sprains, splints (Volkmann's paralysis), neoplasms cause local muscular atrophy. In such cases the association with the primary disease explains the atrophy. Many diseases of the nervous system cause muscular atrophy; these are given below.

Multiple Neuritis (*Lead, Arsenic, Mercury, Alcohol, Diabetes Mellitus, Diphtheria*).—*Characteristics*.—Wasting may be extreme, though usually the degree of weakness may be out of all proportion to the muscular atrophy. The tendency is for slow recovery to ensue.

Chief Signs.—See page 648.

Infantile Paralysis (*Acute Anterior Poliomyelitis*).—*Characteristics*.—In a week or so after the attack most of the paralysis clears up, leaving a residuum, almost always unilateral, of paralyzed muscles which undergo rapid wasting. The atrophy affects one or several groups of muscles innervated by a particular cord segment.

Chief Signs.—See page 628.

Nerve Trauma (*As Ulnar, Sciatic*).—*Characteristics*.—When the lesion is complete there is atrophy of all the muscles supplied by the particular nerve involved.

Chief Signs.—History of injury; paralysis of the muscles supplied by the nerve below the point of injury; anesthesia in the area of its cutaneous distribution; reaction of degeneration in the paralyzed muscles; trophic disturbances.

Neuritis (*Local Inflammatory*).—*Characteristics*.—Ultimately there is extreme atrophy of the muscles supplied by the nerve affected.

Chief Signs.—Boring or stabbing pain in the course of the nerve or parts to which it is distributed, the nerve itself being sensitive to pressure; impairment of muscle function; pain on motion; twitchings and contractions; may be trophic changes in the skin.

Progressive Muscular Atrophy (*Chronic Anterior Poliomyelitis*).—*Characteristics*.—The wasting begins in particular groups of muscles, usually the small muscles of the radial side of the hands, less often in the muscles of the shoulder, neck, scapulæ, hips or legs. It begins unilaterally, but becomes bilateral. It continues to progress and eventually involves the entire muscular system, often to a marked degree.

Chief Signs.—See page 319.

Amyotrophic Lateral Sclerosis.—*Characteristics*.—The atrophy involves espe-

cially the small muscles of the hands and the muscles of the arms, shoulders, and neck, then the bulbar muscles and those of the lower limbs.

Chief Signs.—See page 627.

Transverse Myelitis (*Infective; Compression; Syphilitic*).—*Characteristics.*—Marked muscular atrophy may occur in the muscles of the arms if the lesion involves the lower part of the cervical enlargement, or of the legs if the lesion involves the lumbar enlargement. In the usual situation of myelitis, namely, the dorsal region, the wasting is difficult to detect because it involves the trunk muscles, and there is spastic paraplegia without wasting of the limbs.

Chief Signs.—See page 620.

Syringomyelia (*Spinal Gliosis*).—*Characteristics.*—Wasting usually commences first in the small muscles of the hands (interossei, thenar, and hypothenar groups), eventually spreading into the forearm, arm, and shoulder, though it does not necessarily spread in a definite order but may miss portions. It may begin in the scapulohumeral muscles. The wasting is bilateral but often predominates on one side. The picture of the muscular atrophy may simulate either progressive muscular atrophy or amyotrophic lateral sclerosis.

Chief Signs.—See page 317.

Friedreich's Ataxia (*Hereditary Ataxia*).—*Characteristics.*—Slight general muscular wasting is found. There is no true atrophy but rather a lack of development.

Chief Signs.—See page 21.

Tumor of the Spinal Cord.—*Characteristics.*—The atrophy is wholly dependent upon the location and extent of the lesion. The distribution usually involves an entire extremity.

Chief Signs.—See page 624.

Less Common Causes.—Hemiplegia; Tooth's peroneal type of progressive muscular atrophy; Erb's juvenile dystrophy; facioscapulohumeral muscular atrophy; aneurysm (nerve pressure); neoplasm (involving nerves); cervical rib (pressing on the brachial plexus); pelvic tumors (involving the lumbosacral plexus); tumor of the cauda equina; rare causes of multiple neuritis (ether, carbon bisulphid, naphtha, pernicious anemia, chronic myeloid leukemia, lymphatic leukemia, Hodgkin's disease, splenic anemia, leprosy, malaria, pyemia, infective endocarditis, beriberi, syphilis, typhoid fever, influenza, oral sepsis, gout, pregnancy); acute febrile polyneuritis; tabes dorsalis; infantile progressive muscular atrophy (Werdnig-Hoffmann); hypertrophic interstitial neuritis; congenital asymmetry; paralysis agitans (in hand); polymyositis (muscles firm); thrombo-angiitis obliterans (hand and forearm); neurosis ("hysterical paralysis").

ATTITUDE, ABNORMALITIES OF

(*Posture When Standing*)

(See also "Decubitus," page 693; "Gait, Abnormalities of," page 721; "Kyphosis," page 548; "Lordosis," page 549; "Scoliosis," page 551; and "Shortening of One Lower Extremity," page 617.)

Senility.—*Characteristics.*—The bent rigid attitude of senility is well known.

Paralysis Agitans (*Parkinson's Disease; Shaking Palsy*).—*Characteristics.*—

The head is held forward, the back is curved forward and rigid, the elbows are bent, and the fingers are flexed at the metacarpophalangeal and interphalangeal joints. The legs are slightly flexed at the knees and the thighs adducted. These features, together with the masklike facial appearance, give the impression of general rigidity.

Chief Signs.—See page 546.

Hemiplegia.—*Characteristics.*—There is a quite characteristic posture which depends upon the unilateral rigidities and contractures. In the arm there is flexion at the elbow, wrist, and fingers. The arm is adducted at the shoulder and flexed at the elbow, the forearm is in a state of pronation, the fingers clenched and the thumb flexed into the palm. The thigh is adducted at the hip-joint, the knee is rigid, the heel is slightly drawn up, and the foot is inverted.

For causes of Hemiplegia, see page 314.

Cerebral Diplegia (*Little's Disease*).—*Characteristics.*—When held up the child stands on his toes and the inner sides of the feet, or with the legs crossed. The head is bent forward and the spine is kyphotic or lordotic. The upper extremities may be adducted and flexed, resembling the lower extremities.

Chief Signs.—See page 312.

Encephalitis Lethargica (*Parkinsonian Syndrome*).—*Characteristics.*—The attitude is similar to that of paralysis agitans, but the patient is usually younger.

Chief Signs.—See page 707.

Osteitis Deformans (*Paget's Disease*).—*Characteristics.*—The most characteristic features are the loss in height, indicated by the low position of the hands, the stooping with round shoulder, the head held forward with the chin raised and the chest sunken toward the pelvis, the curved lower limbs held apart and usually with one advanced in front of the other and both the knees slightly bent, the ankles overhung by the legs, and the toes turned out. The enlarged cranium, square-looking and bossed, may add distinctness to these characteristics.

Chief Signs.—See page 637.

Cerebellar Tumor.—*Characteristics.*—The attitude has been given the name of "cerebellar attitude." The head is held high and retracted, there is marked rigidity of the cervical muscles, and one shoulder is higher than the other. In most cases, in the standing position, there is a distinct lordosis.

Chief Signs.—See page 832.

Pseudohypertrophic Muscular Paralysis.—*Characteristics.*—The child stands on a wide base with the shoulders and upper part of the body held well back, and showing a marked anterior convex curve in the lumbar region. This lordosis is only present when the patient is standing erect. The patient frequently falls when standing.

Chief Signs.—Onset between four and ten years, males predominating (five to one); familial nature; waddling gait; characteristic rising from the ground when supine (climbing up the legs after rolling over on to the hands and knees); apparent hypertrophy of the calf muscles.

Less Common Causes.—Hereditary spastic paraplegia; torsion spasm; arthritis deformans.

BLOOD-PRESSURE, HIGH

Slight increase of systolic blood-pressure is not important, in fact, rather rarely encountered. As a rule, if the blood-pressure is high, it is obviously high (160-250 mm. of Hg.). In at least 95 per cent of the cases a permanent or long-standing hypertension is associated with obvious hypertrophy of the heart. Systolic pressures of 140 to 160 as measured in anxious or excited patients are temporary, but the diastolic pressure is little influenced by emotional states. Moreover, in some cases of hypertension it is chiefly the diastolic pressure that is elevated. Systolic pressures above 160 mm. are usually associated with high diastolic pressures. Acute painful states are accompanied by an elevation of the blood-pressure, as in gout, tabetic crises, lead colic, biliary colic, and labor. Blood-pressure increases with age, the general systolic average for the different ages being as follows:

Age, Years	High	Average	Low
15—30	142	123	104
30—40	145	126	107
40—50	147	128	110
50—60	150	133	117
60—70	156	138	121

Essential Hypertension (*Hyperpiesis*).—*Characteristics*.—The blood-pressure is permanently high (above 180), though at first there may be only transitory rises.

Chief Signs.—Occurrence in persons usually over fifty, leading strenuous lives and who are otherwise healthy; ruddy complexion and plethoric habitus; absence of evidences of arterial, cardiac, or renal changes until late; eye-grounds normal or arteries contracted, tortuous, and thickened.

Chronic Interstitial Nephritis.—*Characteristics*.—Persistent high blood-pressure is one of the earliest and most important symptoms. Both systolic and diastolic pressures are raised, the systolic rising at times to 250 or even 300 mm. of Hg.

Chief Signs.—See page 754.

Arteriosclerosis.—*Characteristics*.—As a rule, both systolic and diastolic pressures are high, though individual variations are common; and sometimes when the systolic pressure is high the diastolic may be normal or depressed. Apoplexy must be guarded against as the sclerosis advances and the pressure augments

Chief Signs.—See page 831.

Chronic Parenchymatous Nephritis (*Chronic Bright's Disease*).—*Characteristics*.—The blood-pressure is elevated. It may show marked lability, not infrequently reaching normal values with rest in bed or as the result of intercurrent fever or heart weakness. However, on getting up and assuming the usual duties, with the subsidence of the fever, or with the restoration of the cardiac strength it tends to rise again.

Chief Signs.—See page 659.

Aortic Regurgitation (*From Syphilitic Aortitis*).—*Characteristics*.—The systolic pressure is high and the diastolic pressure much reduced, a high pulse pressure being the rule, although an associated lesion of the mitral valve may greatly modify the blood-pressure as well as the pulse.

Chief Signs.—See page 453.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics*.—There is often a high pulse pressure in these conditions, the systolic pressure varying from 130 to 150 or more with a normal or subnormal diastolic pressure. This is a characteristic of the disease.

Chief Signs.—See page 450.

Thyrotoxicosis (*Toxic Adenoma*).—*Characteristics*.—Same as in exophthalmic goiter (see above).

Chief Signs.—See page 288.

Acute Parenchymatous Nephritis (*Acute Bright's Disease*).—*Characteristics*.—Increased blood-pressure is a characteristic feature, although it may be normal or but little raised if general sepsis or a toxic cardiovascular weakness prevents a general vascular reaction. It may set in abruptly and disappear early, or, as is more frequently the case, rise gradually and recede gradually, corresponding roughly to the course of the kidney involvement.

Chief Signs.—See page 659.

Toxemia of Pregnancy.—*Characteristics*.—The presence of a high blood-pressure in pregnancy should lead to the suspicion of a preëclamptic toxemia. A pressure between 125 and 150 is to be regarded with suspicion, while a pressure over 150 and accompanied by other toxemic symptoms is of serious import.

Chief Signs.—Pregnancy; headache; lassitude; visual disturbances; edema; diminution in the amount of urine; albuminuria.

Lead Poisoning (*Plumbism; Saturnism*).—*Characteristics*.—The blood-pressure is often high due to the frequent occurrence of arteriosclerosis in the disease. The pressure is temporarily increased in an attack of lead colic.

Chief Signs.—See page 196.

Diabetes Mellitus.—*Characteristics*.—The blood-pressure is often high due to a secondary arteriosclerosis.

Chief Signs.—See page 646.

Menopause.—*Characteristics*.—A rise of pressure is not uncommon, but the diastolic does not increase proportionately. Also, the increased pressure is an irregular and intermittent one.

Less Common Causes.—Melancholia; pleural effusions (if very large); pneumothorax (if sudden); morphinism; carbon monoxid poisoning; asphyxia; bronchial asthma (during the attack); cerebral hemorrhage; cerebral tumor; constipation; aortic aneurysm; cyanosis; emphysema; "hysterical seizure"; tabes dorsalis (during the crises); migraine; peritonitis; polycythemia; increased intracranial pressure, as from brain tumor; meningeal hemorrhage and the meningitides (compensatory to overcome medullary anemia); malignant hypertension.

BLOOD-PRESSURE, LOW

Much less valuable diagnostically than high readings are abnormally low blood-pressure readings. Various indefinite states of adynamia (though by no means all) may be accompanied by low blood-pressure. In this class come the infectious fevers, especially tuberculosis, pneumonia, and typhoid fever. Various poisons may lower the blood-pressure, as phosphorus, chlorin gas, arsenic, tobacco, alcohol, methane, narcotics (anesthetics). In the terminal stages of wasting diseases, especially just

before death, the blood-pressure falls, only to rise temporarily as asphyxia occurs, such as in cases of cancer, general paresis, etc. In severe states of anemia the blood-pressure is apt to be low.

Addison's Disease.—*Characteristics.*—The lowest blood-pressure readings occur in this disease, being sometimes as low as 50 mm. of Hg.

Chief Signs.—Insidious onset; pigmentation of the skin and mucous membranes; giddiness and syncope; progressive and marked asthenia.

Essential Hypotension (*Neurocirculatory Asthenia*).—*Characteristics.*—The systolic pressure ranges between 115 and 100 mm. of Hg., or lower, and the diastolic between 80 and 70 or lower.

Chief Signs.—Lack of stamina; fatigability; cold extremities; inability to do prolonged mental or physical work; nervous "dyspepsia"; headache; lassitude; mental depression; fugitive pains; constipation; absence of definite organic disease.

Shock.—*Characteristics.*—There is always a notable fall of blood-pressure in shock from any cause.

Chief Signs.—Preceding accidental or surgical trauma; pallor; anxiety; low temperature; thready pulse; collapse.

Hemorrhage.—*Characteristics.*—The blood-pressure falls following a large hemorrhage and may be almost abolished.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—The blood-pressure is usually low, but in the early stages may be normal. It bears no definite relation to the stage of the disease, although it generally does to the degree of toxemia.

Chief Signs.—See page 412.

Chronic Osteo-Arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics.*—The pressure is usually low.

Chief Signs.—See page 638.

Coronary Thrombosis.—*Characteristics.*—Low blood-pressure following an attack of precordial pain and collapse is indicative of coronary thrombosis as opposed to angina pectoris. It may rise later under appropriate treatment if the attack is survived.

Chief Signs.—Sudden substernal or precordial anginoid pain (lasting one to eight hours); collapse; cardiac enlargement; fever; dyspnea; pericardial friction rub; electrocardiogram (inverted T wave).

Chronic Myocarditis.—*Characteristics.*—Except in the terminal stages an increase in pressure is usually found and the pulse pressure is often small even when functional capacity is far from good. Exertion, however, produces a fall of pressure. Not infrequently myocardial cases show a normal systolic but a high diastolic pressure. A very low blood-pressure associated with mild anginal attacks, dilatation of the left ventricle and aorta, and auricular fibrillation is said to point strongly to syphilitic myocarditis.

Chief Signs.—See page 449.

Less Common Causes.—Carbon monoxid poisoning (later stage); orthostatic albuminuria; phosphaturia; pericardial effusion; diabetic coma; asthenia; cholera; dysentery; jaundice; neurosis; syncope; trypanosomiasis; vomiting; amyloidosis; tachycardia; anaphylaxis; hyperpituitarism; cardiac decompensation (may remain high until late).

BLOOD-PRESSURE, DIFFERING ON THE TWO SIDES

Small irregularities in pressure are of little diagnostic value.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—A pressure difference (5-20 mm.) on the two sides is very commonly found. Differences of 30 mm. or more occur in one-third of the cases. This inequality is present usually only in aneurysms of the transverse portion of the arch.

Chief Signs.—See page 430.

Less Common Causes.—Simple dilatation of the aorta; mediastinal tumor; arteriosclerosis; hemiplegia; cervical rib.

BRITTLE BONES

(*Spontaneous Fracture*)

In the senile the bones become brittle and fracture easily, especially the neck of the femur. Cases of fracture from excessive muscular exertion are to be distinguished from cases of spontaneous fracture. Bedridden patients are liable to fractures.

Myeloid Sarcoma.—*Characteristics.*—A spontaneous fracture is not unusual.

Chief Signs.—See page 616.

Rickets (*Rachitis*).—*Characteristics.*—The bones being unduly soft, not only bend but also give way as a green stick might do, causing a partial or greenstick fracture.

Chief Signs.—See page 685.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—Spontaneous fractures are likely to occur. These are of sudden onset without any exciting cause or are due to a trivial injury. There is no pain, and crepitus can be produced without the patient's knowledge. Union is delayed and an abnormal amount of callus forms. The lower limbs are most liable to fracture.

Chief Signs.—See page 619.

General Paresis.—*Characteristics.*—At a late stage of the disease, when the patient is bedridden, the bones may become atrophic and brittle and fracture from slight and otherwise inadequate causes.

Chief Signs.—See page 100.

Fragilitas Ossium (*Osteopsathyrosis; Osteogenesis Imperfecta*).—*Characteristics.*—Repeated breaking of different bones from apparently trivial causes is common. The fractures are attended with but little pain, unite slowly with but small callus, and are usually followed by some deformity.

Chief Signs.—Congenital or familial tendency; blue scleræ; nerve deafness.

Osteomalacia (*Mollities Ossium*).—*Characteristics.*—The bones bend with undue ease and may sometimes break spontaneously.

Chief Signs.—Occurrence especially after pregnancy; pain on motion referred to the pelvis and thighs; weakness of the limbs; deformities; x-ray.

Less Common Causes.—Multiple sclerosis; carcinoma of the bone; chloroma; Friedreich's disease; gumma of the bone; hemiplegia; hydatid cyst of the bone;

hydrocephalus; infantile paralysis; infantile scurvy; insanity; amyotrophic lateral sclerosis; multiple myeloma; phosphorus poisoning; scurvy; syphilis of the bone; thymic insufficiency; osteosclerosis (*fragilitas generalisata*); osteitis fibrosa cystica; syringomyelia; tuberculous caries; large solitary cyst of the long bones; osteitis deformans (Paget's disease).

CACHEXIA

(See also "Weight, loss of," page 836; "Pallor or Sallowiness of the Face," page 31; and "Atrophy, Muscular," page 665.)

Cachexia is an ill-defined term used to include almost any depraved condition of the body in which nutrition everywhere is defective. It is generally applied to patients who exhibit at the same time progressive loss of weight, and change of complexion in the direction of sallowness or even anemia. Certain blood diseases in which there is enlargement of the spleen with progressive loss of weight and anemia are sometimes referred to a category labeled *cachexia splenica* (see *Splenomegaly*, page 523). In the terminal stages of tuberculosis, Addison's disease, diabetes, both mellitus and insipidus, chronic nephritis, arteriosclerosis, at a period when its diagnostic value is slight and unimportant, cachexia may appear. In the senile, cachexia and wasting may be present, but here care must be taken to exclude organic disease. Cachexia occurs in malignant tumors, but as a late sign, hence its absence should not influence the diagnosis in the early stages.

Carcinoma of the Stomach.—*Characteristics.*—Cachexia is earlier in onset and more rapid in progress than in carcinoma elsewhere, due to the interference with nutrition.

Chief Signs.—See page 494.

Syphilis.—*Characteristics.*—In some instances syphilitic cachexia may be extreme.

Chief Signs.—Presence or history of syphilis; pronounced anemia; muddy pallor; light yellow tingeing of the skin or conjunctivæ; hematogenous jaundice; positive Wassermann.

Cachexia Strumipriva (*Operative Myxedema*).—*Characteristics.*—Cachexia follows only a certain number of total, and a much smaller proportion of partial removals of the thyroid gland.

Chief Signs.—Symptoms those of severe myxedema (which see).

Ankylostomiasis (*Hookworm Disease*).—*Characteristics.*—Cachexia is a prominent feature, showing itself by pallor, underdevelopment, failure of nutrition, and weakness.

Chief Signs.—See page 644.

Malaria.—*Characteristics.*—In fatal cases of paludism a state of cachexia always develops, but all malarial cachexia is not fatal.

Chief Signs.—Malarial history; breathlessness; edema of the ankles; profound anemia; occurrence of hemorrhages (particularly retinal); great enlargement of the spleen (may weigh 5-10 lbs.); enlargement of the liver; demonstration of the plasmodium; therapeutic test.

Less Common Causes.—Amylosis of the liver; cachectic infantilism; prolonged

lactation; pellagra; marasmus infantum; gastro-enteritis and enterocolitis; dysentery; cholera; meningitis; thoracic tumor (by pressure on the thoracic duct); septicopyemia; peritonitis; myelitis; anorexia nervosa; esophageal stricture; morphinism; chronic alcoholism (late); pernicious anemia (very late); leukemia (very late); empyema (late); cirrhosis of the liver (late); Hodgkin's disease; cachexia mercurialis; exophthalmic goiter; scurvy; lead poisoning; trichiniasis; chlorosis; large ovarian cyst; chronic suppuration.

CHILLS OR RIGORS

A chill or rigor consists essentially of a sudden tremor of varying extent and varying duration, usually accompanied by a sensation of cold and followed by a sensation of warmth. All true chills except emotional chills are accompanied or followed by fever. As a general rule a definite chill accompanied by an abrupt rise of temperature is symptomatic of the onset of an infectious disease. In children, general convulsions with partial or complete coma may occur in place of a rigor in adults. The occurrence of an initial chill rarely is of practical assistance in the diagnosis of the causative disease. Recurring rigors often give more definite information for they are seen in but a limited number of general or local infections and often accompanied by localizing signs. Severe pains, as in renal or biliary colic, may lead to a chill or follow it, even when no infection or fever is demonstrable. "Urethral chills," such as often follow the passage of a catheter, may ensue when no infection has taken place.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics*.—As a rule the disease sets in abruptly with a severe chill, which lasts from fifteen to thirty minutes or longer. In no acute disease is an initial chill so constant or so severe. The patient may be taken abruptly in the midst of his work or may awaken out of a sound sleep in a rigor. The temperature taken during the chill shows that the fever has already begun.

Chief Signs.—See page 412.

Septicopyemia.—*Characteristics*.—The onset is marked by a severe rigor, during which the temperature rises to 103-104° F., and is followed by a profuse sweat. The chills are repeated at intervals, either daily or every other day, and there may be slight pyrexia in the intervals. In the chronic cases the chills recur at long intervals with irregular fever.

Chief Signs.—Presence of some suppurative focus of infection; anorexia; nausea, vomiting; malaise; rapid emaciation; transient erythema; anemia; enlarged spleen; may be local symptoms due to septic emboli; high leukocytosis.

Pyelitis or Pyelonephritis.—*Characteristics*.—Rigors associated with intermittent fever are usually present in cases of suppurative pyelitis. Chills may recur at regular intervals. These form a characteristic feature of both calculous and tuberculous pyelitis. The rigors may cease when the fever assumes a hectic type.

Chief Signs.—See page 543.

Puerperal Sepsis (*Septic Endometritis*).—*Characteristics*.—The patient suddenly feels chilly or has a well-defined chill. Generally only one rigor occurs.

Chief Signs.—Occurrence on the third or fourth day of the puerperium; headache; fever; tenderness in the lower abdomen; large, doughy, sensitive uterus;

lochia increased and devoid of color, later diminished or absent; leukocytosis; blood-culture.

Acute General Peritonitis.—*Characteristics.*—In perforation and septic cases the onset is marked by chilly feelings or an actual rigor with intense pain in the abdomen.

Chief Signs.—See page 518.

Stone in the Common Duct (Cholangitis).—*Characteristics.*—There are ague-like paroxysms with chill, fever, and sweating, the so-called hepatic intermittent fever. The rigors are of intense severity, recurring daily for weeks, and present a tertian or quartan type.

Chief Signs.—Jaundice of varying intensity, which persists for weeks or months or even years and deepens after each paroxysm; at the time of the paroxysm, pains in the region of the liver with gastric disturbance.

Acute Osteomyelitis.—*Characteristics.*—A chill usually marks the sudden onset of this condition.

Chief Signs.—See page 303.

Erysipelas.—*Characteristics.*—The stage of invasion is often marked by a rigor, followed by a rapid rise of temperature.

Chief Signs.—See page 768.

Pulmonary Tuberculosis.—*Characteristics.*—The occurrence of rigors indicates the onset of a secondary pyogenic infection of the bronchi or cavities. A chill marks the onset in cases of acute pneumonic phthisis and acute tuberculous bronchopneumonia. It is rare in pure tuberculosis and in miliary tuberculosis.

Malaria.—*Characteristics.*—The rigors tend to recur at regular intervals of forty-eight and seventy-two hours in the benign tertian and quartan infections, at shorter intervals if the infection is mixed. In the estivo-autumnal form the rigors and the course of the fever are much less regular. The chill lasts for a variable time, from ten to twelve minutes to an hour or longer.

Chief Signs.—See page 525.

Infective Endocarditis (Malignant or Ulcerative Endocarditis).—*Characteristics.*—In a few cases there are chills at the onset or recurring chills as in malaria. In the septic type, which is met with usually in connection with an external wound, the puerperal process, or an acute necrosis or gonorrhea, there are often rigors with sweats, irregular fever, and all the signs of septic infection.

Chief Signs.—Irregular fever (septic form) or continuous high fever (typhoidal form), or daily fever (cardiac form); sweats; progressive weakness; petechiæ; embolic phenomena; enlarged spleen; diarrhea (typhoidal form); variable cardiac murmurs (cardiac form); rapidity or irregularity of the pulse; leukocytosis; blood culture; duration: few days (septic form), two to four weeks (typhoidal form), weeks or months (cardiac form).

Less Common Causes.—Acute appendicitis; acute pulmonary congestion; acute nephritis; acute diffuse myelitis; acute febrile polyneuritis (may be definite chill with joint pains so that the case is taken for rheumatic fever); paroxysmal hemoglobinuria; floating kidney (in Dietl's crises); cancer of the stomach; mediastinal abscess; acute rheumatic fever; subphrenic abscess; typhoid fever; typhus fever; relapsing fever; acute cholecystitis; phlebitis; serofibrinous pleurisy; empyema; septic wounds (septicemia); influenza; acute tonsillitis; peritonsillar abscess

(quinsy); smallpox; cerebrospinal fever; acute poliomyelitis; yellow fever; epidemic jaundice (Weil's disease); exanthemata; diphtheria; tetanus; sapremia; glanders; acute gastro-enteritis; mumps; gout; anthrax; hydrophobia; cholera; bubonic plague; dysentery; Malta fever; beriberi; acute leukemia; acute cystitis; infective sinus thrombosis (lateral); hepatic abscess; tick fever; appendicular abscess; perinephritic abscess; prostatic abscess; cerebral abscess; suppurative pylephlebitis; bronchiectasis; rat-bite fever; pelvic abscess; rectal abscess; suppurating hydatids; Milroy's disease (acute crisis); paratyphoid fever; pelvic peritonitis; periarteritis nodosa; renal embolism; suppurative spinal meningitis; suppurative synovitis; actinomycosis; brass-founders' ague; acute lymphosarcoma; acute pancreatitis; tularemia.

COMA

(Unconsciousness)

(See also "Drowsiness, Somnolence, Stupor," page 707; and "Syncope," page 811.)

Coma is a state of unconsciousness from which the patient cannot be aroused. A deeply comatose patient does not swallow fluids placed in his mouth, his conjunctival reflexes are absent, and his pupils insensitive to light. Coma occurs in many diseases as a terminal phenomenon, after the nature of the disease has been suggested by other symptoms, as in: severe fevers, notably typhus, typhoid, cholera, dysentery, scarlet fever, rheumatic fever, diphtheria; acute meningeal inflammations, as suppurative meningitis, tuberculous meningitis, meningo-encephalitis, posterior basal meningitis, and epidemic cerebrospinal meningitis; certain less acute lesions of the central nervous system, as cerebral tumor and abscess, general paresis, disseminated sclerosis, and cerebral syphilis; and other diseases such as cholemia, Addison's disease, Raynaud's disease, and myxedema. The diseases given below are those in which coma may be an early or prominent feature, the differential diagnosis of which is very important. In general anesthesia, coma is present but here there is no question of diagnosis. Hysterical trance may sometimes simulate coma, in which case the patient may be aroused by a painful impression, such as pressure on the supra-orbital nerve. Sudden coma may also come on after prolonged muscular exertion, as after running a marathon race. In all cases of coma a spinal puncture should be performed both on account of its diagnostic and its therapeutic applications.

Cerebral Hemorrhage (*Apoplexy*).—*Characteristics*.—The loss of consciousness is usually sudden and deep, with complete relaxation; sometimes it is more gradual and the loss of consciousness may not occur for a few minutes after the patient has fallen or after the paralysis of the limbs is manifest.

Chief Signs.—Flushed, cyanosed, or ashy face; stertorous breathing; slow, bounding pulse; pupils usually dilated, sometimes unequal and inactive (contracted in pontine and ventricular hemorrhage); cheeks blown out in expiration; spluttering lips; paralysis of the face, arm, and leg on one side (hemiplegia); may be conjugate deviation of the head and eyes; extensor plantar reflex in the paralyzed foot; absent abdominal and corneal reflex on the paralyzed side; may be rise of temperature.

Uremia.—*Characteristics*.—Unconsciousness invariably accompanies the gen-

eral convulsions when these occur in uremia, but coma may develop without any convulsive seizures. The coma is frequently preceded by headache and apathy, vomiting, convulsions, and twitchings. In chronic types, unconsciousness may persist for weeks.

Chief Signs.—History of renal disease; may be dropsy of the face and legs; may be Cheyne-Stokes respiration; furred tongue with foul, heavy or urinous breath; presence of albumin, casts, and blood in catheterized specimens of urine; hypertension; cardiac hypertrophy; usual absence of unilateral paralysis; blood chemistry (nitrogen retention).

Diabetes Mellitus.—*Characteristics.*—The coma is gradual in onset but is commonly preceded by headache, irritability, and uncontrollable drowsiness merging into profound coma with remarkably deep noisy breathing.

Chief Signs.—History of diabetes; may be dyspneic coma (air-hunger; acyanotic dyspnea); fruity odor to the breath; high specific gravity of urine with glycosuria; hyperglycemia; presence of acetonemia and acetoneuria.

Acute Alcoholism.—In this condition the unconsciousness is not coma, but stupor more or less profound. See under Stupor.

Fracture of the Skull (*Traumatic Meningeal Hemorrhage or Brain Injury*).—*Characteristics.*—Coma develops gradually, especially if the hemorrhage is extradural. The patient becomes drowsy, stupid, and finally comatose. There may be before the onset of coma a "lucid interval" of several hours or a day, during which the patient, stunned by the original blow, recovers consciousness and is apparently normal (extradural). When coma comes on immediately it is suggestive of depressed fracture pressing directly on the brain.

Chief Signs.—History of direct violence to the cranium; may be local paralysis or convulsions; rise in blood-pressure to a high degree; edema of the retina; may be crepitus, swelling, hematoma; may be escape of cerebrospinal fluid; lumbar puncture (may be bloody fluid); x-ray.

Eclampsia.—*Characteristics.*—The convulsions are always followed by unconsciousness.

Chief Signs.—See page 685.

Concussion of the Brain.—Actual coma is rare, the condition being usually one of stupor. See Stupor, page 708.

Sunstroke (*Insolation*).—*Characteristics.*—The coma may come on suddenly, but in the more usual form the insensibility follows other symptoms and deepens into profound coma.

Chief Signs.—History of exposure to the hot sun's rays; headache; dizziness and oppression; nausea; visual disturbances; diarrhea; frequent micturition; flushed face; rapid, full pulse; temperature 107° to 110° F.; may be convulsions; polynuclear leukocytosis of the spinal fluid, later lymphocytosis.

Opium Poisoning.—*Characteristics.*—When the dose is large, stupor passes into coma, which may be reached very soon.

Chief Signs.—History of laudanum or morphin taken; pupils contracted to pin points (like pontine hemorrhage except for absence of pyrexia and flexor plantar reflex); cold clammy skin; subnormal temperature; slow, feeble pulse; excessive slowness of respiration; may be laudanum odor of the breath; chemical analysis of the stomach contents giving positive test for morphin.

Stokes-Adams Syndrome.—*Characteristics.*—Profound coma may accompany the syncopal attacks.

Chief Signs.—History of previous attacks of bradycardia; extremely slow ventricular rate; stertorous breathing; may be epileptiform convulsions; cyanosis; acceleration of the pulse before recovery; electrocardiography (heart-block).

Carbon Monoxid Asphyxia.—*Characteristics.*—The condition is usually divided into three stages, the first being marked by vertigo, headache, throbbing sensation, and muscular weakness; the second by unconsciousness with cyanosis, a cherry red color of the skin, and elevation of temperature, and the third by coma with apnea. Coma, however, may last for days and yet be followed by recovery.

Chief Signs.—History of inhalation of illuminating gas, coal-gas, water-gas, etc.; odor of gas in the surrounding atmosphere or from the body; spectroscopic examination of the blood (revealing the presence of carbon monoxid hemoglobin).

Epilepsy.—*Characteristics.*—Profound unconsciousness follows the second stage (clonic) of the fit, lasts for an hour or less, and is followed usually by a prolonged period of sleep. In status epilepticus, the patient does not recover consciousness between convulsions.

Chief Signs.—See page 684.

Meningitis (*Cerebrospinal, Suppurative, Tuberculous*).—*Characteristics.*—Coma is terminal and preceded by somnolence or stupor (see Stupor, page 707).

Asphyxia (*Apnea:—drowning, strangulation, suffocation, hanging, foreign bodies in the air passages, irrespirable gases; pulmonary thrombosis, etc.*)—*Characteristics.*—Consciousness is soon lost, though in the beginning the senses may be remarkably acute.

Chief Signs.—History; heaving respiration; lividity; prominent veins; weak pulse; hemorrhage from the nose, rectum, or other mucous membranes; may be involuntary urination.

Less Common Causes.—Cerebral abscess (optic neuritis present); cerebral tumor (optic neuritis present); pontine hemorrhage (pin-point pupils, hyperpyrexia, bilateral Babinski, and muscular flaccidity); ventricular hemorrhage (rapidly fatal); cerebral embolism; meningeal hemorrhage (bloody spinal fluid); thrombosis of the lateral sinuses (may be history of middle-ear or frontal sinus infection); internal hydrocephalus (prolonged coma); “hysterical” trance (no stertor or cyanosis, heart regular, patient resists opening of the eyes); thrombosis of the superior longitudinal sinuses; poisoning (carbolic acid, chloral hydrate, veronal, sulphonal, dial, bromids); general paresis (terminal or after epileptiform convulsions); plumbism (saturnine encephalopathy); severe hemorrhage, as in hemoptysis, hemothecesis, melena, ruptured tubal pregnancy, post-partum hemorrhage, ruptured aneurysm (sudden onset of coma preceded by amaurosis, sometimes accompanied by epileptiform convulsions, and not long remaining profound); myxedema; exposure to excessive cold; coma carcinomatosum; severe erysipelas; pernicious malaria; Addison’s disease; hypnotic trance; amyloid disease; acute yellow atrophy of the liver; fat embolism; pernicious anemia.

CONSTIPATION, ACUTE*(Including Causes of Intestinal Obstruction)*

Acute constipation is of frequent occurrence in most acute infectious diseases, but can usually be overcome by purgatives or enemata; and the other symptoms are so much more striking that the presence of constipation is of little value in the diagnosis. The infallible proof of absolute stoppage of the bowel is the failure of repeated enemata to produce results.

Acute Intestinal Obstruction in General (*For special causes see below.*)—*Characteristics.*—Constipation is absolute for feces and flatus after a few hours, the bowel below the obstruction sometimes emptying itself at the onset. There is often desire but inability to pass flatus. Enemata are ineffective.

Chief Signs.—Abdominal pain, early, often sudden, severe, at first colicky, then continuous; vomiting, early, constant, repeated, often copious, first stomach contents, then bilious, finally fecal; shock progressing to collapse; face pale and pinched, low temperature, rapid feeble pulse, cold sweat, dry tongue, thirst, hiccough; moderate abdominal distention, doughy feel, variable slight tenderness, later distention, often tympanites, rigidity, and tenderness; may be visible peristalsis.

Intestinal Bands and Adhesions.—*Characteristics.*—Constipation is absolute if kinking or strangulation occurs.

Chief Signs.—See page 681.

Intussusception (*Responsible for 39 Per Cent of Cases of Intestinal Obstruction*).—*Characteristics.*—There may be one or two loose fecal stools, then only blood or blood and mucus are passed without any admixture of feces or any gas. In a day or so even blood and mucus may disappear and stoppage is absolute.

Chief Signs.—Occurrence often in plump male infants; onset sudden; intermittent abdominal pain with drawing up of the legs and crying during the spasm; vomiting at the onset, rarely fecal; tenesmus; passage of blood and mucus; sausage-shaped tumor one inch in diameter and of variable length in the course of the colon, often near the left costal margin (present in 70 per cent).

Strangulated Hernia.—*Characteristics.*—Constipation is absolute.

Chief Signs.—Presence of a hernia; shock; abdominal pain and distention; vomiting which finally becomes stercoraceous; increased peristalsis; hernia irreducible, tense, painful, and without impulse on coughing; later, symptoms of general peritonitis.

Neoplastic Stricture (*Almost Always Carcinoma of the Colon*).—*Characteristics.*—When the stricture becomes complete and the lumen of the bowel is occluded, the fecal current is permanently interrupted and constipation is absolute.

Chief Signs.—See page 680.

Paralytic Ileus (*Adynamic Ileus; Pseudo-Obstruction*).—*Characteristics.*—Constipation is absolute.

Chief Signs.—Occurrence after surgical operation with sudden relief of chronic pressure or much handling of the bowel, "acute abdomen" or delirious states, particularly fractures of the spine, uremia, and pneumonia; absence of peristalsis; abdominal distention; rectal ballooning.

Volvulus (*Most common in the sigmoid, next the small intestine, lastly the cecum.*).—*Characteristics.*—Constipation is absolute.

Chief Signs.—Occurrence of the sigmoid variety most frequently in constipated men between forty and sixty; sudden onset, but initial shock often less severe than in most other forms of intestinal obstruction; history of chronic constipation; late vomiting; extreme distention of the abdomen; rounded tympanitic tumor in the left iliac fossa; tenesmus with total absence of stool; occurrence of early vomiting in volvulus of the small intestine; sometimes rounded tympanitic tumor palpable in the region of the umbilicus; occurrence in volvulus of the cecum or ascending colon of a rounded tympanitic tumor in the right iliac fossa.

Acute Appendicitis.—*Characteristics.*—Constipation is present in about two-thirds of the cases, accompanied usually by nausea and vomiting. The attack may set in with diarrhea in children.

Chief Signs.—Sudden onset of abdominal pain settling in the right iliac fossa, either sharp or severe or a dull ache; some degree of fever extremely constant, moderate, rarely over 102° F. (may be absent in localized abscess already formed, or severe general peritonitis); pulse proportional to the temperature (increasing rapidly, serious); tenderness at McBurney's point; increased rigidity or resistance of the right rectus; may be ill-defined swelling or occasionally tumor in the right iliac fossa; leukocytosis constant in acute cases (12,000-15,000) with polynucleosis (may be absent in mild or very severe cases); may be vomiting (always after the pain, never before).

Lead Colic.—*Characteristics.*—There is usually obstinate constipation.

Chief Signs.—May be history of working with lead; colic; anemia and cachexia; blue line on the gums; may be wrist-drop (supinator longus escaping); lead present in the urine and feces (electrolysis).

Acute Hemorrhagic Pancreatitis.—*Characteristics.*—Constipation is present.

Chief Signs.—History of previous dyspepsia, gastric pain, or biliary colic; sudden onset with severe pain in the upper abdomen; shock and collapse with small rapid pulse and cold skin; early copious and bile-stained vomiting, rarely fecal; abdomen distended, no tumor; low temperature; leukocytosis; occasionally jaundice and glycosuria.

Less Common Causes.—Thrombosis or embolism of the mesenteric vessels; perforated gastric or duodenal ulcer (when peritonitis sets in); spasmodic stricture (enterospasm, dynamic obstruction); non-malignant stricture of the gut (tubercular, diverticular, syphilitic, dysenteric); acute secondary leptomeningitis; acute gastritis; acute transverse myelitis; lobar pneumonia; milk sickness; Weil's disease; acute diverticulitis; tuberculous appendicitis (late); tabes mesenterica (late); typhoid perforation; gall-stones; twisted pedicle of an ovarian cyst; imperforate anus; diaphragmatic hernia (when acute obstruction occurs); internal or retroperitoneal hernia (when strangulated); tuberculous meningitis.

CONSTIPATION, CHRONIC

Chronic constipation is retention of feces from any cause and of long standing. It is a very common modern complaint. In the majority of cases it cannot be attributed to any specific disease but is an entity in itself. In other cases it may

be the evidence of a local or general disease. Simple chronic constipation may be due to sedentary habits, improper diet, insufficient fluid, inattention to bowel function, etc. In all of these cases the deficiency may be in the motor activity of the abdominal or intestinal muscles, insufficient stimulation of intestinal movements, deficient sensibility of the intestinal mucous membrane, depression of the nervous system, inhibition of the motor intestinal activities, or enterospasm. The x-ray study of the intestinal function will in many cases reveal one or more of the factors enumerated above. The following list includes those diseases in which chronic constipation is directly due to some general or local pathological condition. Constipation in infants is common.

Chronic Intussusception.—*Characteristics.*—There are recurrent, irregular attacks of constipation or diarrhea, the latter accompanied by colic, vomiting, and the presence of blood in the feces.

Chief Signs.—Occurrence usually in adults or old people from invagination of malignant or polypoid growths; the onset may be acute, subsiding into chronic, lasting a month to a year or more; may be acute obstruction, perforation, or presentation of the tumor at the rectum; tumor often palpable abdominally or per rectum; visible peristalsis; sphincter relaxed.

Non-Malignant Stricture of the Bowel (*Tuberculous, Diverticular, Syphilitic, Dysenteric*).—*Characteristics.*—There may be gradually increasing constipation, with attacks of obstinate constipation alternating with attacks of diarrhea, although, as the contents of the small bowel are liquid, the fecal current may suffer no interruption until its lumen is totally occluded.

Chief Signs.—History of an etiological factor; attacks of colicky pain with abdominal distention, visible, palpable, audible peristalsis, and vomiting; x-ray.

Carcinoma of the Colon.—*Characteristics.*—As the growth enlarges there is gradually increasing constipation, diarrhea, or costiveness alternating with loose movements.

Chief Signs.—Occurrence after forty; pain; tenderness; gas distention over the colon or vicinity of the growth, and visible peristalsis; mucus at first and later mucopurulent blood-tinted discharge; tarry stools, abnormally formed, which may be evacuated soft like sheep dung, or in long round or tapelike shape if the colon caliber is diminished; may be coffee-ground stools or clear blood if the tumor invades the rectum; tympanites until late; may be constant desire to stool; cachexia; metastasis; x-ray; sigmoidoscopy.

Fecal Impaction.—*Characteristics.*—There is chronic constipation merging into chronic and finally into subacute obstruction.

Chief Signs.—Common occurrence in elderly women with chronic constipation; hard fecal mass or masses palpable along the course of the colon or in the rectum, sometimes movable from one portion of the bowel to another; absence of normal pitting on pressure as in normal feces; may be fever, tenderness on pressure, mucopurulent discharge from the rectum, and tenesmus (if stercoral ulcers are present).

Visceroptosis.—*Characteristics.*—Constipation is marked.

Chief Signs.—May be history of repeated pregnancy or ascites; occurrence commonly in thin, lemon-tinted females with long torso; prominent lower belly with depression of the epigastrium; general lassitude, pains in the back; anorexia;

dyspepsia; faintness; flushing; abdominal throbbing; radiography with an opaque meal.

Mucomembranous Colitis (*Mucous Colitis*).—*Characteristics*.—Constipation is a special feature in many cases, but sometimes there are attacks of diarrhea.

Chief Signs.—History of “hysteria,” hypochondriasis, or melancholia, with concentration on self and worry about mucus in the stools; paroxysmal attacks associated with colicky pains or occasionally crises like appendicitis; passage of tenaceous mucus, slimy and gelatinous like frog spawn, or in strings, strips, or tubercular membranes; often a painful tender spot between the navel and left costal border; spastic colon; chronicity.

Lead Poisoning (*Plumbism; Saturnism*).—*Characteristics*.—Constipation is obstinate, often preceding the colic, but attacks of acute diarrhea may also occur and recur over long periods of time.

Chief Signs.—See page 196.

Stricture of the Rectum (*From Cicatrization of Syphilitic, Malignant, Tuberculous, Gonorrheal, Dysenteric, or Typhoid Ulceration*).—*Characteristics*.—Constipation with deformity of the stools (ribbon or pipe-stem) is present, but there may be attacks of apparent diarrhea (from enteritis); finally there may be complete obstruction.

Chief Signs.—Pain; discharge (mucus, pus, or blood); rectal examination with the finger and proctoscope.

Chlorosis.—*Characteristics*.—Constipation is a common symptom and has been regarded as an important element in the causation of the disease.

Chief Signs.—See page 643.

Idiopathic Dilatation of the Colon (*Hirschsprung's Disease*).—*Characteristics*.—There is always constipation with attacks of pain and then diarrhea, either natural or induced.

Chief Signs.—Occurrence from birth, continuing to the twentieth or thirtieth year; enlarged abdomen; paroxysmal attacks with increasing distention; upper half of the abdomen especially enlarged; spreading of the costal arch; remarkable length from the ensiform cartilage to the navel; coils of colon prominent in attacks (even the longitudinal bands may be visible).

Intestinal Bands and Adhesions.—*Characteristics*.—Constipation varies from the mildest form of chronic type to the most severe form in acute obstruction.

Chief Signs.—History of former peritonitis; operation on the pelvic organs, appendix, or intestine; lack of characteristic symptoms; rarity of tumor; occurrence of acute obstipation when kinking or strangulation occurs.

Less Common Causes.—Chronic appendicitis (constipation but often attacks of colicky diarrhea); diverticulitis (most common in women in association with constipation); abscess of the liver; abdominal arteriosclerosis; cancer of the stomach; cardiac decompensation; chronic gastritis; cysts of the mesentery; diabetes mellitus (constipation is the rule); erythema; hyperchlorhydria; neurosis; tabes dorsalis; movable kidney; obstructive jaundice; pellagra; pyloric obstruction; scurvy; tuberculous meningitis; typhoid fever (three-fourths of the cases); stercoral ulcers; rickets; pregnancy; acute yellow atrophy of the liver; imperforate anus; ascites; senile atrophy; cretinism; gout; hypothyroidism (myxedema); prostatitis; tetanus; tetany; extra-uterine pregnancy; cerebral tumor; gastric ulcer.

CONTRACTURES

Contractures are lasting bodily deformities, involving muscles and joints. They have been divided roughly into two classes, active and passive, though the division is not sharp, since active contractures when long established tend to become passive. The distinction depends upon the simple physical fact that in the former the contracture can be overcome, while in the latter it cannot be overcome, *i.e.*, without rupturing the tissues. Active contractures must, of course, be distinguished from muscular contractions, such as cramps, tonic or tetanic contractions, and spasms. These are forms of pathological movements which may throw the affected parts temporarily into positions of contracture; but they are ephemeral and not permanent.

Hemiplegia (*Late Rigidity or Contracture*).—*Characteristics*.—Late rigidity or contracture first appears several weeks or months after the stroke and is due to the preponderance of one group of muscles over their antagonists. The thumb of the affected side is flexed and pressed into the palm, the fingers clenched, the wrist and elbow flexed, the forearm pronated, and the arm adducted. The thigh is adducted, the knee extended, the heel drawn up, and the foot inverted, and the characteristic gait results.

For causes of Hemiplegia, see page 314.

Infantile Paralysis (*From Acute Anterior Poliomyelitis*).—*Characteristics*.—Contractures may begin to show themselves within a few months of the acute disease. The limbs are most involved, although spinal curvature may develop. The deformities of the limbs arise either by contraction of the non-paralyzed muscles or by subsequent contracture of the paralyzed muscles.

Chief Signs.—See page 628.

Torticollis (*Wry-Neck*).—*Characteristics*.—Contracture of the sternomastoid muscle on one side of the neck is present due to shortening or spasm. The chin is raised and turned toward the sound side, the ear of the affected side approaching the clavicle.

For causes of Torticollis, see page 290.

Chronic Osteo-Arthritis (*Arthritis Deformans; Rheumatoid Arthritis*).—*Characteristics*.—Bony ankylosis with deformity of the joint often results from the growth of adhesions, ecchondroses, or exostoses, limiting the range of motion of the joint and causing a corresponding shortening of the muscles, which are relaxed, thereby producing a passive contracture.

Chief Signs.—See page 737.

Spinal Syphilis (*Spinal Thrombosis; Meningomyelitis; Myelomalacia*).—*Characteristics*.—As spasticity develops the lower limbs become flexed and adducted at the hips, and the feet pointed. This may be prevented or greatly reduced by proper care.

Chief Signs.—See page 625.

Cerebral Diplegia (*Little's Disease*).—*Characteristics*.—Contractures are always present. If the legs only are affected there is "cross-legged" or "scissors" position of the extremities, the feet being pointed and the thighs adducted. The arms, if involved, are held in the position of hemiplegic contracture.

Chief Signs.—See page 312.

Cicatrices (*Burns and Extensive Superficial Injuries*).—*Characteristics.*—When of the third degree, burns are always followed by scars, which, when extensive, tend strongly to contract, causing flexures of the joints, ectropion, jaw ankylosis, etc. Extensive superficial wounds may produce the same effects.

Chief Signs.—History of burn or injury and the presence of scars.

Nerve Injury (*Severe*).—*Characteristics.*—Contractures with deformity may occur due to the overaction of non-paralyzed muscles. These deformities are of late occurrence.

Chief Signs.—History of severe contusion, compression, or rupture of a peripheral nerve or nerves; paralysis of the affected muscles with the reaction of degeneration; numbness, tingling, “pins and needles,” or burning sensation in the distribution of the nerve; may be pain or tenderness along the nerve; anesthesia in the skin area supplied exclusively by the nerve; may be trophic changes in the tissues affected.

Dupuytren’s Contracture.—*Characteristics.*—There is permanent flexion of the little and ring fingers due to shortening of the palmar fascia, beginning as an induration of the palm with gradual puckering of the skin.

Chief Signs.—Occurrence in middle-aged men; may be history of long-continued pressure as by the use of certain tools, or a history of goutylike rheumatoid symptoms; inability to extend the fingers even when the wrist is flexed.

Volkmann’s Ischemic Contracture (*Ischemic Myositis*).—*Characteristics.*—There is clawlike contracture of the interphalangeal joints of the fingers, the metacarpophalangeal articulations remaining straight. In the milder forms the fingers can be straightened when the wrist is bent. In the worst cases the wrist is also strongly flexed. The forearm is pronated and slightly flexed.

Chief Signs.—Age between three and fifteen years; history of compression of a splint or bandage applied for treatment of a fracture; pain and edema; shortening, atrophy, and induration of the flexor and pronator muscles of the forearm; palpable hardening of the muscles.

Friedreich’s Ataxia.—*Characteristics.*—Active contractures occur and cause scoliosis, or scoliokyphosis, pes varus or equinovarus, and “main bote” (an analogous deformity of the hand with hyperextension of the terminal phalanges). The heel is drawn up, the dorsum of the foot arched, the sole hollowed out, and the toes flexed at the interphalangeal joints and hyperextended at the metatarso-phalangeal; prominent hypertrophy of the extensor longus hallucis may be found.

Chief Signs.—See page 21.

Neurosis (“*Hysteria*”).—*Characteristics.*—There may be well-marked contractures due to active contraction of various muscles, particularly in the limbs, but the tongue, eyelid, or neck muscles may also be involved. In the upper extremity the tendency is toward flexion of the elbow, wrist and fingers, with adduction of the arm; in the lower extremity, toward extension at the hip and knee-joints with the foot in a position of talipes equinovarus. Passive motion is impossible, but under an anesthetic the contractures pass away.

Chief Signs.—See page 624.

Less Common Causes.—Amyotrophic lateral sclerosis; ataxic paraplegia; multiple sclerosis (late); Erb’s spinal paralysis; external spinal meningitis; primary

lateral sclerosis; peripheral neuritis (especially arsenical); paralysis agitans (third stage); amyotonia congenita; progressive muscular atrophy ("main en griffe"); syringomyelia; gonorrheal arthritis; bulbar paralysis (third stage); fibrositis; spondylitis deformans; tumor near a joint; myositis ossificans; tuberculous arthritis.

CONVULSIONS

(Fits; Convulsive Seizures or Attacks)

Convulsions are paroxysms of involuntary muscular contractions. This section deals with the more generalized forms. In most cases, both sides of the body, face, neck, arms, trunk, and legs are convulsed equally, but the convulsions may be limited to or more marked on one side. They are usually clonic, less often tetanic or tonic. In tonic convulsions the affected muscles become rigid, while in the clonic they are thrown into violent jerky movements. The duration is commonly only a matter of seconds or minutes. In most cases consciousness is lost.

Epilepsy.—*Characteristics.*—Convulsions practically constitute the disease, and when they occur the condition is designated "grand mal." The attack is usually preceded by an aura, most often sensory. The onset is sudden, often with a loud cry, and the patient falls unconscious, usually without any attempt at protection. The convulsion consists of three stages: The tonic stage in which there is general rigidity, more severe on one side; the head is retracted and rotated to one side, the elbows and wrists flexed, and the hands clinched, the lower extremities extended, the respiratory muscles fixed, causing lividity and cyanosis, the pupils dilated, the duration being only a few seconds. The clonic stage, in which twitching commences and progresses in severity and frequency to violent convulsions, the face, eyes, head, trunk, and limbs being affected mainly on one side, with biting of the tongue, frothing of the mouth, involuntary micturition and defecation, cold sweat, rapid pulse, noisy respiration, the whole stage lasting from one to two minutes. Coma, in which the limbs are flaccid and congested, the patient gradually returning to consciousness or falling into natural sleep. In status epilepticus, recurrent convulsions occur without return to consciousness, the temperature rising (103°–105° F.) and the pulse and respiration becoming very rapid.

Chief Signs.—Onset almost always before thirty years of age, commonest under five years; history of recurring attacks; may be scars of previous attacks; absence of signs of organic disease.

Uremia.—*Characteristics.*—Epileptiform convulsions may occur. The onset is rapid or preceded by headache and restlessness. The fits are usually general, resembling epilepsy (cry rare), and may recur rapidly. The temperature is usually low but may rise. Uremic amaurosis may follow without retinal changes and passes off in a day or two. Local or Jacksonian convulsions may also occur in uremia.

Chief Signs.—History of renal disease; mental dulness and apathy; headache (often occipital); twitching of the muscles of the face and hands; paroxysmal dyspnea; vomiting; oliguria; albuminuria, cylindruria, hematuria; high blood urea (blood chemistry); albuminuric retinitis (ophthalmoscopy).

Neurosis ("*Hysteria*").—*Characteristics*.—Convulsions may occur in all types, major, minor, and cataleptic. The fits are noisy and protracted and the movements more or less purposive. Consciousness is not lost, attempts to open the eyes are resisted, and pressure over the supra-orbital notch causes withdrawal of the head. The sphincters are not relaxed, and the tongue or cheeks are rarely bitten. The convulsions are brought on by some emotional upset and tend to cease when sympathy is not offered.

Chief Signs.—See page 624.

Infantile Convulsions.—*Characteristics*.—In young children the onset of the infectious diseases is frequently marked by convulsions, which take the place of a chill in an adult. These convulsions are general but may be unilateral, and loss of consciousness is the rule. They are most common in the onset of lobar pneumonia, scarlet fever, pertussis, acute meningitis, and acute poliomyelitis, and are always accompanied by a high fever (104°–105° F.). Recurring convulsive seizures without fever are attributed to some minor cause, such as dyspepsia, teething, etc., and are indicative of a spasmophilic diathesis, usually tetany or rickets (see below).

Tetany (*Spasmophilia*).—*Characteristics*.—General convulsions, epileptiform in type, are exceedingly common with tetany in infancy. After that they are less frequently seen. They may occur without evident exciting cause and may be very numerous. They may disappear gradually or suddenly.

Chief Signs.—May be carpopedal spasm or laryngospasm; may be positive Chvostek's sign, important if under five years of age (contraction of the facial muscles if the facial nerve is tapped, best about the middle of the neck); positive Trousseau's sign, important if under five (carpal spasm after pressure for several minutes on the arm, obliterating the pulse); increased irritability of the nerves to the galvanic current (contractions with less than five m. amp).

Rickets (*Spasmophilia*).—*Characteristics*.—General convulsions may occur, also laryngismus stridulus, as a part of a general disposition to muscular spasm.

Chief Signs.—Common occurrence in non-breast-fed infants from one to three years of age; insidious onset; flabby nutrition; early sweating; bronchitis; pot-belly; delayed dentition (no teeth at twelve months); beading of the ribs; enlarged epiphyses, especially of the radius; head deformities; curvature and deformities of the limbs; laxity of the ligaments; muscular weakness.

Eclampsia.—*Characteristics*.—Eclamptic convulsions occur in a pregnant or parturient woman either suddenly without any warning or after premonitory symptoms of toxemia. They may occur during sleeping or waking hours, beginning with rolling of the eyes, dilated pupils, twitching, then distortion of the mouth and face, extending to the arms and body and legs. They are usually clonic in character though sometimes tonic, the patient becoming rigid. Breathing is stertorous, the face is congested, and the patient foams at the mouth and often bites the tongue. During the convulsions, which may last for a few seconds to two minutes, the woman is profoundly unconscious, and after the movements passes into coma which lasts for a longer or shorter period.

Chief Signs.—Occurrence during pregnancy, before, during, or after labor; may have been previous toxic symptoms (increased blood-pressure, visual disturbances); marked albuminuria.

Chronic Alcoholism.—*Characteristics*.—Epileptiform convulsions may result

directly from chronic drinking. It is a hopeful form in one respect, since the convulsions may disappear entirely with a return to habits of abstinence.

Chief Signs.—History of prolonged abuse of alcohol, particularly whisky or gin; mental changes (concentration, memory and judgment defects, carelessness, irritability); congested, veiny facies; alimentary disturbances; tremor of the hands and tongue; occurrence of multiple neuritis, arteriosclerosis, cirrhosis of the liver.

Tuberculous Meningitis (*Basilar Meningitis*).—**Characteristics.**—In the final period or stage of paralysis, convulsions are not infrequent, and there are spasmodic contractions of the muscles of the back and neck. Spasms may occur in the limbs of one side.

Chief Signs.—Greater frequency between the third and fifth years (but adults are not exempt); existence of a tuberculous focus in the body; development of meningeal symptoms in three stages: (1) Irritation, (2) increasing intracranial pressure, (3) paralysis; lumbar puncture (fluid clear or slightly turbid, protein increased, small lymphocytes increased, possible demonstration of the tubercle bacilli).

General Paresis (*General Paralysis of the Insane; Dementia Paralytica*).—**Characteristics.**—Epileptiform convulsive seizures of two kinds occur in this disease: (a) Limited Jacksonian seizures followed by loss of power, transient or permanent, (b) general epileptiform seizures, which when severe are accompanied by pyrexia and are followed by aggravation of the mental symptoms.

Chief Signs.—See page 100.

Cerebral Syphilis (*Cerebrospinal Syphilis*).—**Characteristics.**—Fits of a general epileptic character occur in cerebrospinal syphilis, due either to diffuse syphilitic infection or to an increase of intracranial pressure in association with a basal meningitis. Jacksonian attacks or localized focal seizures arise from a circumscribed gummatous patch.

Chief Signs.—See page 695.

Apoplexy (*Ventricular and Pontine*).—**Characteristics.**—In ventricular hemorrhage convulsions occur in many cases, and in hemorrhage into the pons, convulsions are frequent.

Chief Signs.—Sudden loss of consciousness with complete relaxation; quick giving way in ventricular hemorrhage of hemiplegic symptoms to absolute relaxation; strongly contracted pupils, conjugate deviation, hyperpyrexia in pontine hemorrhage.

Tetanus.—**Characteristics.**—The disease is characterized by the development of tonic spasm of the muscles with frequent paroxysms. They begin in the muscles of mastication (trismus), spread to the muscles of the back (orthotonos, etc.), and later perhaps to the abdomen and limbs. The hands usually escape.

Chief Signs.—History of a wound; incubation, five to twelve days; onset in the jaws and neck; frequent recurrence of the spasms; profuse sweating; rise of temperature; abdominal rigidity.

Stokes-Adams Disease.—**Characteristics.**—Epileptiform or apoplecticiform convulsions occur from time to time unaccompanied by paralysis.

Chief Signs.—Occurrence in arteriosclerotics in the second half of life; history of previous seizures; presence of heart-block (electrocardiogram); excessive slowness of the pulse, especially during the attack (forty, thirty, twenty beats).

Jacksonian Epilepsy.—*Characteristics.*—The convulsions begin with tonic spasm, followed by clonic jerking in a particular muscle or group of muscles, whence it may or may not extend to a general involvement, in which former event it does so in a definite and systematic manner, for example, spreading from the fingers up the arm or from the toes up the lower extremity.

Chief Signs.—Sensory aura in the affected part; may be retention of consciousness during the fit, or until late; may be evidence of cerebral tumor or syphilis.

Asphyxia (*Drowning, Suffocation, Strangulation*).—*Characteristics.*—In asphyxia there are strugglelike convulsions to obtain breath, and finally in many cases genuine epileptiform convulsions.

Chief Signs.—Occurrence of circumstances shutting off the breath; lividity; early loss of consciousness; engorged veins of the head; weak pulse; hemorrhages; early stoppage of respiration.

Cerebral Tumor.—*Characteristics.*—Generalized epileptiform convulsions may be produced by a tumor in almost any part of the brain, not necessarily in the immediate neighborhood of the motor areas. As a rule they occur comparatively late in the disease, though occasionally they appear as the initial symptom. Jacksonian attacks occur, particularly in the pre- and postcentral cortical areas.

Chief Signs.—May be headache; vomiting, often early and constant (especially in cerebellar and pontine growths), not related to food, unaccompanied by nausea, and may be projectile; optic neuritis (choked disk; papillitis), usually bilateral; vertigo; may be mental or emotional changes; may be convulsions; slow pulse; localizing symptoms; x-ray.

Less Common Causes.—Cerebellar tumor (ipsilateral tonic convulsions); lead poisoning; meningeal, arachnoid, and subdural hemorrhage; cerebrospinal meningitis (except in early childhood convulsions are not common); hereditary syphilis (may be fatal in the first week of life); hemorrhage (after rapid loss of large quantities); sinus thrombosis; status lymphaticus; apoplexy (rarely in adults); cortical apoplexy; compression of the brain; cystic kidney; cysticercus of the brain; acute yellow atrophy (onset); Addison's disease; aortic stenosis; psychasthenia; absinthism; malingering; cerebral abscess (usually late); anesthesia paralysis; ergotism; exostosis of the skull; frights; hydrocephalus, congenital; thermic fever; hyperpyrexia; idiocy; acute poliomyelitis (meningeal form); intussusception; acute myelitis; myoclonus epilepticus; oxycephaly; hemorrhage in peptic ulcer (from cerebral anemia); thrombosis (preceding hemiplegia); acute Bright's disease (in children at the onset); acute secondary leptomeningitis; acute diffuse myelitis (onset); strychnin poisoning; infantile hemiplegia; encephalitis lethargica (epileptomaniacal type).

CRAMPS, MUSCULAR

Cramps are involuntary muscular contractions accompanied by severe pain and temporary paralysis of movement, partial or complete. These cramps usually result from over-exertion of the affected muscles, as strikingly seen in swimmers who are suddenly overtaken by painful spasm and paresis of the muscles of the

legs or legs and arms. Cramps are also prone to occur in patients debilitated by fevers or chronic wasting diseases.

Occupation Neurosis (*Professional Cramps*).—*Characteristics*.—Particular groups of muscles which are subjected to chronic strain and over-use in particular occupations become the seat of cramps and aching pains; and their movements lose their delicacy and become incoördinated and spastic. A fine tremor may be present in the affected limb.

Chief Signs.—Occurrence in those whose work requires constant skilled movements of certain muscle groups; inheritance of neurotic tendency; presence of anxiety, ill-health, or local injury or disease.

Tetany.—*Characteristics*.—Paroxysmal cramps occur in the extremities and constitute the main feature of the disease. They may continue, however, for hours or days, and are very painful. During the spasms the fingers are extended at the terminal and flexed at the metacarpal joints and pressed together, while the thumb is adducted and flexed into the palm; the wrist and elbow are flexed, the arms folded over the chest. The toes are drawn together and flexed, the foot arched and turned inwards, and the ankles and knees extended. In severe cases the cramps occur also in the face, neck, and even the trunk.

Chief Signs.—See page 685.

Less Common Causes.—Neurosis ("hysterical tetany"); heat exhaustion; alcoholic neuritis (sensory type); Asiatic cholera; spastic paraplegia.

CREPITUS

(*Crackling*)

Fracture.—*Characteristics*.—There is a grating sensation or sound obtained by rubbing the ends of the broken bones together. It is dry and harsh. In epiphyseal separation it is soft or moist. Crepitus is not always obtained, especially in impacted fracture or interposition of soft tissue between the fragments. When present over a bone it is often a conclusive sign of fracture.

Chief Signs.—History of injury; pain; loss of function; swelling; local tenderness; ecchymosis; muscle spasm; deformity; preternatural mobility; x-ray.

Endosteal or Myeloid Sarcoma.—*Characteristics*.—On palpation a feeling of crepitus or egg-shell crackling may be obtained which may sometimes be accompanied by pulsation.

Chief Signs.—See page 616.

Synovitis (*Chronic*).—*Characteristics*.—Crepitus may be felt and heard in the affected joint.

Chief Signs.—Slight pain on movement; fluctuation; weakness with restriction of motion; atrophy of neighboring muscles; hypertrophied synovial fringes may be palpable (especially in the knee); x-ray.

Tenosynovitis (*Wrist*).—*Characteristics*.—A marked feeling of crepitus may be elicited over the flexor tendons, especially when the tendon sheaths contain "melon-seed bodies."

Chief Signs.—See page 325.

Osteo-Arthritis.—*Characteristics*.—A silken crepitus is felt on moving the

joint, comparable to the rubbing together between the fingers of two pieces of stout silken ribbon.

Chief Signs.—See page 737.

Subcutaneous or Cellular Emphysema.—*Characteristics.*—A subcutaneous swelling appears, grows in size, and crackles when touched. It usually occurs in the chest following an injury, such as a penetrating fractured rib, and occasionally occurs in the region of the forehead or cheek from injury to the frontal or maxillary sinus.

Malignant Edema (*Gangrenous Emphysema; Gas Gangrene*).—*Characteristics.*—There is a rapidly spreading edema, followed by gaseous distention of the tissues and by gangrenous cellulitis. The emphysematous area crackles when pressed upon, and is surrounded by a marginal zone of edema which is covered by blebs containing thin, putrid, reddish matter.

Chief Signs.—History or evidence of a wound, usually a puncture; rapidly developing high fever; painful and rapidly spreading gangrene; delirium; coma; presence of the *Bacillus aerogenes capsulatus* or the bacillus of malignant edema, with other organisms; death.

Less Common Causes.—Hydrocephalus (occipital region); craniotabes (occipital region in congenital syphilitics); rickets.

CYANOSIS

Cyanosis is a purplish or grayish-blue tint noticeable especially in the face, in the lips, and under the nails. Cyanosis, when combined with pallor, gives various ashy-gray tints, while the admixture of cyanosis and jaundice results in a color approaching a greenish hue. Local cyanosis or acrocyanosis (as of the hands) is not considered under this heading. Lividity of the lips and finger-tips is common in healthy persons after exposure to the cold.

Cardiac Decompensation (*Tricuspid Regurgitation*).—*Characteristics.*—Cyanosis with no or only slight dyspnea is most strikingly seen in chronic uncomplicated valvular disease, especially in decompensated mitral lesions. The face has a livid hue, while the lips, tips of the ears, and finger-ends are bluish in color.

Chief Signs.—See page 642.

Congenital Heart Disease.—*Characteristics.*—The first symptom is cyanosis, which is present in about 90 per cent of the cases. It is so characteristic that the disease is called “blue disease” or “morbus ceruleus.” It is found in almost all cases of patent interventricular septum and pulmonary stenosis, but it is rare in patent foramen ovale and patent ductus arteriosus. The cyanosis appears early in the first week of life and is most noticeable in the face, hands, and feet, which are of a livid or bluish tint.

Chief Signs.—See pages 453 and 455.

Lobar Pneumonia (*Croupous Pneumonia*).—*Characteristics.*—It not infrequently happens that the early stage is associated with a marked cyanosis, which later disappears although the patient's condition, both general and circulatory, is much worse than it was.

Chief Signs.—See page 412.

Bronchopneumonia (*Capillary Bronchitis*).—*Characteristics*.—In severe cases with extensive pulmonary lesions, there is usually some evidence of cyanosis due to the embarrassed right heart. When cyanosis is present the skin is apt to be cool and clammy. In children extreme cyanosis may occur.

Chief Signs.—See page 413.

Acute Alcoholism.—*Characteristics*.—The face is flushed and sometimes slightly cyanosed.

Chief Signs.—See page 37.

Laryngeal Diphtheria.—*Characteristics*.—The color gradually changes, and on the second or third day there is slight blueness of the finger-nails and the lips. The face is usually pale, but later this, too, may become cyanotic.

Chief Signs.—See page 394.

Epilepsy.—*Characteristics*.—The face becomes livid during the tonic stage of grand mal and gradually lessens during the clonic stage.

Chief Signs.—See page 684.

Spasmodic Laryngitis (*Spasmodic Croup*).—*Characteristics*.—There may be slight lividity of the finger-tips and of the lips.

Chief Signs.—See page 398.

Laryngismus Stridulus.—*Characteristics*.—The face becomes cyanosed during the attack. Upon the appearance of the cyanosis, the spasm relaxes and respiration begins.

Chief Signs.—See page 398.

Whooping-Cough (*Pertussis*).—*Characteristics*.—During the spasm the face may become a deep red or purple color, sometimes almost black. Suffocation seems imminent when, with a deep crowing inspiration, air enters the lungs and the color is quickly restored.

Chief Signs.—See page 358.

Apoplexy (*Cerebral Hemorrhage*).—*Characteristics*.—The face is injected, sometimes cyanotic, or of an ashy-gray hue during the stage of coma.

Chief Signs.—See page 675.

Bronchial Asthma.—*Characteristics*.—Cyanosis may appear at the height of a paroxysm but pallor is equally common. Cyanosis is more common in the cases with emphysema and right heart weakness.

Chief Signs.—See page 391.

Acute Pneumothorax.—*Characteristics*.—Cyanosis is present in severe cases, but there is only slight lividity or even pallor in less severe types.

Chief Signs.—See page 416.

Hypertrophic Emphysema.—*Characteristics*.—Cyanosis of extreme degree may be present without much dyspnea, the patient being fairly comfortable and able to walk about. The cyanosis may be so severe as to be startling.

Chief Signs.—See page 416.

Effort Syndrome (*Neurocirculatory Asthenia; Soldier's Heart*).—*Characteristics*.—The skin surface is livid and there is coldness and cyanosis of the extremities.

Chief Signs.—See page 444.

Pericarditis with Effusion.—*Characteristics*.—Associated with the dyspnea there is in many cases a peculiar dusky, anxious countenance.

Chief Signs.—See page 755.

Mediastinal Tumor.—*Characteristics.*—In addition to the dilatation of the veins over the upper part of the chest from pressure, the face, upper part of the thorax, and the arms may become cyanosed, swollen, and edematous.

Chief Signs.—See page 432.

Goiter (*In General*).—*Characteristics.*—Severe cyanosis with dyspnea may occur. The attacks may be paroxysmal even though the thyroid gland itself does not seem to vary in size; or the cyanosis and dyspnea may be continuous and progressive when there has been rapid enlargement from hemorrhage, acute suppuration, or from progressive and extreme fibrosis.

For causes of Goiter, see page 287.

Enterogenous Cyanosis (*Methemoglobinemia and Sulphemoglobinemia*).—*Characteristics.*—Cyanosis is permanent and there is absence of shortness of breath.

Chief Signs.—History of the use of certain drugs (potassium chlorate, coal-tar products, etc.); intestinal disturbances; absence of lesions of the heart or lungs; spectroscopic examination of the blood (revealing the change in the composition of the hemoglobin).

Polycythemia Rubra Vera (*Erythremia; Vaquez's Disease; Osler's Disease*).—*Characteristics.*—The skin presents in warm weather a curious brick-red color, and in cold weather a cyanosis of the face and hands as marked as any that is ever seen.

Chief Signs.—Enlarged spleen; vasomotor instability (hand engorged when held down, anemic when raised); fullness of the veins; great increase in the number of erythrocytes (seven to twelve millions per c. mm.).

Traumatic Asphyxia.—*Characteristics.*—A violet lividity arises immediately after a sudden violent compression of the trunk, and is manifested over the head and neck down to and sometimes below the clavicle. There are a great many spots in the skin in which the color is much deeper, and similar spots on the mucous membranes of the mouth and throat. The lividity may clear up in a few hours but the spots may remain for days. The spots do not fade at all from pressure, the livid area fades but slightly.

Chief Signs.—See page 77.

Carbon Monoxid Asphyxia.—*Characteristics.*—The face is cyanosed, the tongue is swollen and cherry-red, and the same peculiar cherry-red color makes its appearance on the neck, trunk, and buttocks.

Chief Signs.—See page 677.

Foreign Body in the Air Passages.—*Characteristics.*—When the foreign body is large enough to block the air passages, the patient fights madly for air, his face becomes cyanotic, his veins stand out prominently, violent coughing begins, and the patient may fall unconscious.

Chief Signs.—See page 393.

Asphyxia of Drowning, Strangulation, Suffocation.—*Characteristics.*—There is lividity of the face and hands and the countenance may be swollen.

Chief Signs.—See page 677.

Less Common Causes.—Patent foramen ovale; ulcerations of the larynx (tuberculous, syphilitic, malignant); Ludwig's angina; glossitis; acute pharyngitis; retropharyngeal abscess; traumatism of the larynx and pharynx; paralysis of the dilators of the larynx; compression of the trachea or bronchi; asthma; bronchitis, fibrinous or plastic; tetanus; strychnin poisoning; pleurisy; hydrothorax;

ascites; tympanites; opium poisoning; acute inanition; congenital atelectasis; diphtheritic paralysis; malaria; aortic insufficiency; arteriovenous aneurysm (arch of the aorta and the superior vena cava); bronchiectasis; cholera asiatica; pneumonic plague; Hodgkin's disease; neurosis; mycosis intestinalis; tetany; cretinism; tricuspid stenosis; Buhl's disease; infantile hemoglobinuria; tabes dorsalis (laryngeal crisis); embolism and thrombosis of the lung; kyphoscoliosis (lung compression); acute myocarditis; dilatation of the heart; acute hemorrhagic pancreatitis; pulmonary apoplexy; sunstroke; trypanosomiasis; diaphragmatic hernia; hypothyroidism; iodism; fibroid phthisis; adherent pericardium; pulmonary neoplasm.

DEATH, SUDDEN

(Causes of)

Severe trauma and hemorrhage are obvious causes of sudden death.

Ruptured Ectopic Pregnancy.—*Characteristics.*—This is probably the most common cause of sudden death of young women who have previously been in perfect health. Shock and collapse may immediately follow the severe pain of the rupture.

Chief Signs.—See page 765.

Angina Pectoris.—*Characteristics.*—Death may suddenly occur during an attack, from cessation of the heart-beat.

Chief Signs.—See page 367.

Coronary Thrombosis.—*Characteristics.*—This is a common cause of sudden death. There may be no preliminary symptoms; this is more common in those in whom no heart disease had previously been recognized. Not infrequently the attack follows a heavy meal and when the pain occurs in the epigastrium is mistaken for acute indigestion.

Chief Signs.—See page 670.

Cerebral Hemorrhage.—*Characteristics.*—Large hemorrhages into the corona radiata, and especially those which rupture into the ventricles, rapidly prove fatal. Pontine hemorrhage may also be quickly fatal.

Chief Signs.—See page 675.

Ruptured Aortic Aneurysm.—*Characteristics.*—Rupture is the terminal event in about 50 per cent of the cases. Aneurysm of the arch of the aorta may rupture into the air passages, esophagus, large intrathoracic pulmonary or systemic veins, pericardium, heart, pleura, peritoneum, or spinal canal. An acute and severe pain may mark the time of the rupture and be followed by acute blanching and collapse. Death is usually sudden, but if the perforation takes place into some closed space, such as the mediastinum or retroperitoneal tissues, coma develops first. Rupture into the pericardium causes sudden death before the amount of blood lost has been sufficient to cause marked blanching.

Chief Signs.—Knowledge of the presence of an aneurysm; sudden intense precordial pain or feeling of something giving way within the chest; symptoms of internal hemorrhage or gushing of blood from the mouth (if rupturing into a bronchus, the trachea, or esophagus); extreme cyanosis (if into a vein or artery);

anginal attack (if into the pericardium); visible bleeding (if through the chest-wall).

Aortic Regurgitation.—*Characteristics.*—Sudden death is not uncommon and may occur as the result of sudden cardiac failure or an attack of angina pectoris. The blood-pressure remains high until the last heart-beat.

Chief Signs.—See page 453.

Pulmonary Embolism.—*Characteristics.*—A large embolus occluding the pulmonary artery or one of its main branches causes death within a few minutes.

Chief Signs.—History of a previous operation, phlebitis, or puerperium (one to two weeks); sudden severe precordial pain; cyanosis; protruding eyes; dilated pupils; swollen cervical veins; rapid, weak, or irregular pulse; may be coma, convulsions, or delirium.

Status Lymphaticus.—*Characteristics.*—In infants and young children who appear normal or who have been given an anesthetic, sudden death may be due to an enlarged thymus. A sudden attack of asphyxia and sometimes convulsions may unexpectedly occur.

Chief Signs.—See page 287.

Adams-Stokes Syndrome.—*Characteristics.*—Sudden death during an attack of syncope is common in this disease.

Chief Signs.—See page 686.

Less Common Causes.—Atelectasis (infants); convulsions in children; asphyxia from foreign body; retropharyngeal abscess; spinal caries (dislocation of the upper cervical vertebræ); pulmonary thrombosis; marasmus (in infants); acute pneumothorax; lightning stroke; electric shock; hanging.

DECUBITUS

(Posture in Bed)

(See also "Orthopnea," page 754; and "Opisthotonos," page 753.)

Occasionally the position of the patient in bed may be of assistance in the diagnosis. Lying on the back and constantly slipping toward the foot of the bed is seen in many acute infections and conditions of grave weakness. The patient may be coiled up in the various forms of colic. Great restlessness in bed indicates nervous irritability, acute hemorrhage, sometimes shock, and is a bad sign in the critically ill.

Acute General Peritonitis.—*Characteristics.*—The patient lies on the back with the thighs drawn up and the shoulders elevated, a position which relieves as far as possible the tension of the abdominal muscles.

Chief Signs.—See page 518.

Acute Appendicitis.—*Characteristics.*—The right leg or both legs may be drawn up in order to relax the tension of the abdominal muscles.

Chief Signs.—See page 679.

Cerebrospinal Meningitis.—*Characteristics.*—The posture may be quite characteristic. The patient lies with the body stiff and the head drawn back, sometimes to an extreme degree. There is general flexion of the extremities.

Chief Signs.—See page 753.

Pleurisy with Effusion.—*Characteristics.*—Prior to pouring out of the effusion the patient is apt to lie upon the sound side to protect the sensitive pleura from pressure. After effusion is established he usually lies upon the side of the effusion in order to facilitate the full expansion of the sound lung. The shoulder upon the side of the effusion is upon a slightly higher level.

Chief Signs.—See page 416.

Lobar Pneumonia.—*Characteristics.*—The patient lies flat in bed, often on the affected side, presenting the characteristic appearance of this disease (flushed face, expiratory grunt, herpes, dilating alæ nasi, etc.).

Chief Signs.—See page 412.

Cerebellar Tumor.—*Characteristics.*—When the patient is reclining the attitude may be characteristic. He is apt to lie on one side in a position of general flexion and rotation, with the head turned laterally, and the chin elevated and pointed to one shoulder. The back of the head is, therefore, somewhat lower than the chin.

Chief Signs.—See page 832.

Less Common Causes.—Cavitation of the lung (on the side opposite the cavity); atelectasis of the lung (on opposite side); pneumothorax (opposite side); sciatica (opposite side); hepatic colic (coiled up and restless with pain); renal colic (idem); hip disease (knee drawn up); pelvic peritonitis (knee drawn up); vertebral caries (prone position); abdominal aneurysm (prone position); typhoid fever (sinks in bed in the adynamic stage); pulmonary abscess; pulmonary gangrene; bronchiectasis (on the side of the cavity); empyema (on the side of the disease).

DELIRIUM

(See also "Dementia," page 696; and "Mentality, Changes of," page 738.)

Delirium is applied to the rambling, incoherent talk of patients during the height of febrile or acute toxic states and also to the same phenomenon occurring in the insane. It is distinguished from the irrational, incoherent talk of the psychoneurotic or the hysteric, who are usually aware of the content of their speech. Delirium may occur in the course of many febrile diseases in which its diagnostic significance is not great, its presence and severity depending upon the height of the fever, the degree of toxemia, the mental makeup of the patient, and the previous history (alcoholism). Children become delirious on very slight provocation.

Lobar Pneumonia.—*Characteristics.*—Delirium and great irritability may be among the initial symptoms, especially in the so-called cerebral pneumonias of children. In alcoholic cases the features of delirium tremens may predominate. It is stated that apex pneumonia is more often accompanied by severe delirium than basal pneumonia.

Chief Signs.—See page 412.

Uremia (Chronic Nephritis).—*Characteristics.*—Even before marked manifestations of uremia are present there may be mental wandering (delirium).

Chief Signs.—See page 684.

Psychotic Delirium (Collapse Delirium and Acute Hallucinatory Confusion or

Amentia).—*Characteristics*.—In collapse delirium, after a condition of mild confusion, the incoherence may become absolute. In *amentia* the delirium is milder, with confusion, incoherence, and perplexity.

Chief Signs.—Psychomotor excitement, gradually becoming worse; profound disorientation, clouding of consciousness, high fever (106° F.), complete anorexia, coated tongue, effusive diarrhea, indicanuria, rapid emaciation and exhaustion, catalepsy, grimacing and even coma in collapse delirium; usually wilder confusion in *amentia*; elimination of pulmonary or other severe infection.

Delirium Tremens.—*Characteristics*.—Delirium is characteristic, setting in in a day or two after the beginning of the illness. The patient talks constantly and incoherently, is incessantly in motion, and desires to go out and attend to some imaginary business. Hallucinations of sight and hearing may develop and cause great terror (the "horrors"). Animals, particularly black ones, are fancied to be seen in the environment and crawling over the body. The delirium lasts only three or four days in most cases.

Chief Signs.—Occurrence in a chronic alcoholic following a temporary excess or sudden withdrawal of alcohol; onset never sudden; tremors, especially of the hands and tongue; insomnia; slight fever (100° – 102° F.); albuminuria (in 50 per cent); leukocytosis at the height of the delirium; sluggish pupil reaction or even complete Argyll-Robertson reaction; may be acute cardiac dilatation; acute course in about three days.

Typhoid Fever.—*Characteristics*.—Delirium is present in very severe cases though less frequent under hydrotherapy. It may exist from the beginning, but usually occurs in the second or third week. It may be slight and only nocturnal, and is usually quiet, though sometimes noisy, the patient trying to escape or actually becoming maniacal. In later stages a low muttering delirium is of very serious import.

Chief Signs.—See page 701.

Cerebral Syphilis.—*Characteristics*.—A sudden and violent onset of delirium may be the first symptom, or it may have been preceded by headache, alterations of character, and loss of memory.

Chief Signs.—History of syphilis; headache; giddiness; excitement; epileptic or hemiplegic seizures; cranial nerve paralysis; may be optic neuritis, vomiting, and convulsions (as in tumor); variability of symptoms; positive blood Wassermann; spinal fluid examination (lymphocytosis, increased globulin, colloidal gold reaction, positive Wassermann); results of treatment.

Cerebrospinal Meningitis.—*Characteristics*.—Delirium occurs at the onset, occasionally of a furious and maniacal kind. The patient may display marked erotic symptoms at the onset. The delirium gives place in a few days to stupor, which as the effusion increases deepens to coma.

Chief Signs.—See page 754.

Encephalitis Lethargica (*Epidemic Encephalitis*).—*Characteristics*.—At the onset of the illness the mental symptoms are frequently irritative and delirium with hallucinations and delusions is often noted. This is more apt to occur at night, and may be present when in the daytime the mental state is that of stupor with some rationality.

Chief Signs.—See page 707.

Acute Cerebral Anemia (*Hemorrhage*).—*Characteristics*.—Delirium may be present if much blood is lost, followed by loss of consciousness if the bleeding continues.

Chief Signs.—See page 395.

Multiple Neuritis (*Alcoholic*).—*Characteristics*.—Delirium is common with hallucinations and extravagancies. In the Korsakoff syndrome or psychosis polyneuritica there is loss of memory with pseudoreminiscences, *i.e.*, false notions as to the patient's position in time and space, and fabulous explanations of real occurrences.

Chief Signs.—See page 311.

Pericarditis with Effusion.—*Characteristics*.—Delirium occurs with the hyperpyrexia of rheumatic cases and may be accompanied by peculiar mental symptoms (melancholia, suicidal tendencies). In other cases the condition resembles closely delirium tremens. Delirium does not materially affect the prognosis.

Chief Signs.—See page 362.

Exhaustion Psychosis (*Collapse Delirium; Acute Hallucinatory Confusion*).—*Characteristics*.—Following a period of restless irritability and insomnia, a condition of confusion develops with perplexity, hallucinations, excitement, clouding of consciousness, disorientation, and dreamy delusions.

Chief Signs.—History of severe exhaustion (hemorrhage, parturition, prolonged anxiety and worry, mental shock, convalescence from fevers); complete incoherence; fever (up to 106° F.); gastro-intestinal symptoms (anorexia, coated tongue, offensive diarrhea); indicanuria; emaciation; may be stupor.

Less Common Causes.—Brain abscess (acute form); serous meningitis; acute cerebrospinal leptomeningitis (always secondary); acute diffuse myelitis; acute endocarditis (emboli); acute pancreatitis; acute yellow atrophy of the liver; alcoholic cirrhosis of the liver (may be a noisy joyous delirium); aortic insufficiency (toward the close); dengue; ergotism; drug poisoning (salicylates and belladonna); erysipelas; general paresis; gout; lead poisoning; malaria (in the hot stage and in the pernicious type); miliary fever; mumps; "hysteria"; rat-bite fever; relapsing fever; Rocky Mountain spotted fever; rheumatic fever; scurvy; idiopathic internal hydrocephalus; smallpox; suppurative tonsillitis; toxemic jaundice; tuberculous meningitis (second stage when aroused from stupor); typhus fever; yellow fever; absinthism; acidosis; cerebral hemorrhage; severe chorea; dysentery; gangrene of the lung; glanders; hydrophobia; influenza; acute labyrinthitis; scarlatina; septicemia; trichiniasis; tick fever; Weil's disease; severe pain and shock; senile delirium; meningeal hemorrhage.

DEMENTIA

(See also "Mentality, Changes of," page 738.)

By dementia is meant a deterioration of the intellectual faculties.

Acromegaly.—*Characteristics*.—Progressive dementia has been noted following irritability of temper, marked change in the disposition and great depression.

Chief Signs.—Onset often in the third decade in tall persons; increase in size of the features (hats, gloves, shoes); headache; may be polyuria; bitemporal

hemianopsia; enlargement of the face, especially the lower jaw; enlargement of the hands and feet; kyphosis; enlarged thorax; glycosuria; x-ray of the sella turcica.

Myxedema.—*Characteristics.*—In some cases there is a final condition of dementia, accompanied by delusions and hallucinations.

Chief Signs.—Occurrence in females (6 to 1); slowness of mental, muscular, and metabolic functions; increase in bulk; languor; solid edema of the subcutaneous tissues which does not pit on pressure; expressionless features; puffy eyelids; dry skin; feeling of coldness; constipation; slow pulse; low temperature; slow progression; low B.M.R.; therapeutic test (thyroid substance or thyroxin).

Pellagra.—*Characteristics.*—Mental features are marked and may progress to profound depression and ultimately to dementia.

Chief Signs.—Insidious onset with marked spring recrudescences; stomatitis and salivation; dyspepsia; muscular weakness and progressive emaciation; severe and persistent diarrhea; symmetrical erythematous squamous eruption on the backs of the hands, also at times the face, neck, etc., aggravated by sun exposure; diet test (full protein allowance).

Cerebral Syphilis.—*Characteristics.*—Dementia following other mental symptoms, of which forgetfulness with indistinct speech is common, may occur.

Chief Signs.—See page 695.

Epilepsy.—*Characteristics.*—Dementia may develop, especially with (1) frequent attacks over long periods and commencing in early life, (2) in petit mal, the dementia commencing after the epileptic attacks cease.

Chief Signs.—See page 684.

Huntington's Chorea (*Chronic Chorea*).—*Characteristics.*—There is mental impairment leading finally to dementia.

Chief Signs.—See page 746.

Chronic Alcoholism (*Alcoholic Dementia*).—*Characteristics.*—Dementia when present is slow and progressive, manifesting itself by mental enfeeblement, particularly in the esthetic and moral spheres, lack of mental application, moral obliquity, forgetfulness and loss of memory, enfeeblement of judgment and reasoning faculties.

Chief Signs.—See page 685.

Dementia Præcox or Schizophrenia (*Hebephrenic, Catatonic, Paranoid*).—*Characteristics.*—The dementia consists of a gradual mental deterioration, beginning at puberty or adolescence and tending to progress. The dementia is in many instances at least more apparent than real, the outwardly bizarre, erratic, and often silly symptoms being due to a splitting of the intellectual and emotional parts of the psyche—in other words a schizophrenia.

Chief Signs.—Insidious development of mental symptoms; failure of voluntary attention and lack of interest; normal orientation with no evidence of any clouding of consciousness; shallowness of ideas (content of thought); gradually increasing thought dilapidation, sometimes to incoherence ("word salad"); defective memory, especially for recent events; thought deprivation (amnesia) due to strong emotional content; may be stereotypy, perseveration, negativism, neologism; inaccessibility of the individual; may be physical signs, as emaciation, anorexia, insomnia, tachycardia, dermatographia, convulsions.

General Paresis (*General Paralysis of the Insane; Dementia Paralytica*).—*Characteristics*.—There is a tendency toward progressive dementia, which may commence in various ways: (a), with mild exaltation, grandiose conceptions, and euphoria; (b), with an alteration of the character; (c), with symptoms of “neurasthenia”; (d), with melancholia. The condition finally reaches a state of profound dementia, in which memory is entirely in abeyance and the patient pays no attention to his surroundings nor to the care of his person.

Chief Signs.—See page 100.

Senile Dementia.—*Characteristics*.—Dementia is a gradual process, beginning usually with a loss of memory for recent events, lack of impressionability, lack of ability to recognize faces, marked egotism, irritability. As years go on, a true misoneism is developed, so that the patient will not tolerate the slightest deviation of the usual order of things. There is marked tendency to reminiscence, the events of long ago being vividly recalled, the individual living in a world of former days. The condition becomes progressively worse, with failing mental initiative, failure of judgment, loss of comprehension of environment, and a purely vegetative existence.

Chief Signs.—Occurrence usually after sixty, occasionally earlier (presenile dementia; signs of physical deterioration in the skin, hair, voice, eyes, and arteries; may be psychotic symptoms (persecutory delusions, childish emotionalism).

Arteriosclerotic Dementia.—*Characteristics*.—The dementia is characterized by a progressive failure of the mental faculties, and local symptoms due to areas of softening in the brain. Some cases develop only nervous symptoms with forgetfulness, great irritability, hypochondriacal ideas with a paranoid trend, remaining stationary for a long time. Other cases progress with epileptiform seizures, development of focal symptoms, and an advancing dementia that becomes profound.

Chief Signs.—Presence of arteriosclerotic changes; absence of laboratory findings of paresis.

Less Common Causes.—Ergotism; tabes dorsalis; amaurotic family idiocy; multiple sclerosis; paralysis agitans; cerebral tumor; meningeal hemorrhage.

DEVELOPMENT, RETARDED

(*Physical or Mental*)

(See also “Dwarfism and Infantilism,” page 710.)

The physician is often consulted because of backward muscular development of an infant or child, most frequently because it is late in walking. Generally malnutrition, or any other prolonged or severe illness, may postpone for several months this or any of the other functions in their development. The first voluntary movements are usually in the fourth month; at this time the head can be held erect when the trunk is supported. At seven or eight months a healthy child is usually able to sit erect and support the trunk for several minutes. In the ninth or tenth month is usually seen the first attempt to bear weight upon the feet. At eleven or twelve months a child usually stands with slight assistance. The first attempts at walking are commonly seen in the twelfth or thirteenth month, though quite wide variations are seen in healthy children.

Cretinism.—*Characteristics*.—Failure to grow and to develop mentally are

usually the first things to attract attention. The body is greatly dwarfed. The extremities, fingers, and toes are short and thick. With cretins of ten years of age or even more, the relative infantile proportions of the body are maintained. There is a characteristic facies. (See under "Characteristic or Peculiar Facies," page 41.)

Chief Signs.—See page 41.

Rickets (*Rachitis*).—*Characteristics.*—The child does not hold up its head, sit alone, or make efforts to stand or walk at the proper time; when improvement of the rickets begins, however, it usually goes steadily forward, and a rachitic child, though it usually retains the evidence of the disease in various residual deformities, usually develops normally in other respects.

Chief Signs.—See page 685.

Idiocy, Imbecility, Moronism (*Feeble-Mindedness*).—*Characteristics.*—Idiocy includes those individuals who never develop beyond the mental age of an average child of two years; imbecility, those who never acquire a higher degree of mentality than the average child of seven; and moronism (condition of being a moron), those individuals who do not acquire a higher degree of mentality than children of twelve. A high degree of mental deficiency can usually be recognized very early; the lesser degrees require longer observation and sometimes special tests (Binet-Simon, etc.).

Infantile Cerebral Diplegia (*Little's Disease*).—*Characteristics.*—The general physical development of the child is often interfered with, so that he remains small and delicate, or perhaps dies of some acute disease in early infancy, never having been able to sit erect, or even support his head. In other cases the general nutrition is not affected, and life may be prolonged indefinitely, but usually with some mental impairment. This is seen in all degrees; it may be so slight as not to be noticed until the child is two or three years old, or the child may be idiotic. Often these children are not able to stand until they are over three years old and do not walk alone until they are four or five years old, and then with a peculiar cross-legged gait owing to spasm of the thighs.

Chief Signs.—See page 312.

Chondrodystrophy (*Achondroplasia*).—*Characteristics.*—This dystrophy of the epiphyseal cartilages, in consequence of which the epiphyses and diaphyses are prematurely united, produces a variety of dwarfism.

Chief Signs.—See page 636.

Chronic Internal Hydrocephalus.—*Characteristics.*—For a time the nutrition is well maintained, but when the head enlarges markedly, the body wastes and the disproportion between the two may seem greater than it really is. Even though the progress of the disease is slow the development of the child is greatly retarded. Intelligence in most cases is interfered with, in some cases only slightly, in others very markedly, while some are idiotic.

Chief Signs.—See page 13.

DIARRHEA, ACUTE

(See also "Stools, Blood in," page 803; "Stools, Mucus in," page 806; and "Stools, Pus in," page 808.)

Numerous watery actions may occur following some severe emotional disturbance such as fright or shock. Acute infectious diseases are frequently associated with diarrhea.

Acute Enterocolitis (*Acute Gastro-Enteritis; Acute Catarrhal Enteritis; Enterocolitis or Colitis; Acute Duodenitis, Jejunitis, Ileitis, or Ileocolitis; Acute Diarrhea; Acute Intestinal Catarrh; Acute Intestinal Indigestion; Cholera Infantum; Cholera Nostras; Acute Enteric Intoxication; Cholera Morbus*).—*Characteristics*.—The number and character of the stools depend upon the degree of irritation and the portion of the bowel mainly involved. In the simplest form of duodenitis or high enteritis, a mild diarrhea may supervene independently of, or coincident with, the self-administration of a laxative within twelve or twenty-four hours; and the stools are yellow, brown, or greenish, and soft in consistency, with little mucus or blood, but undigested food material. Involvement alone of the head of the colon or cecum and ascending colon may give very little diarrhea, perhaps some mushy stools; but when the splenic flexure, descending colon, sigmoid, and rectum become involved, the farther down the involvement and the more intense it is, the more the diarrhea. Then, the first few movements may be only fecal matter, thinner than normal, and later on the feces, if formed at all, will not only contain intimately mixed mucus, but will be coated over with a layer of thin mucus; and after the canal has been emptied of fecal matter, the movement may consist of a watery colorless and odorless discharge, or it may become gray, green, or yellow. In children, it may result in the rice-water type of stool, or thin to semi-jellylike masses of brownish or greenish stained, foul-smelling mucus may be the only thing passed. With the involvement of the large bowel the greater is the possibility of bleeding and the stool may be pure blood and mucus, or the mucus coating blood-stained.

Chief Signs.—Acute onset; may be nausea and vomiting; anorexia, furred tongue, thirst; may be fever; may be collapse; abdominal distention and tympanites; colicky abdominal pain; tenesmus when low down; borborygmi; may be tenderness over the colon.

Acute Diarrhea in Infants.—*Characteristics*.—Several clinical groups are recognized: (1) Simple non-inflammatory diarrhea; (2) acute gastro-enteritis or enterocolitis (inflammatory diarrhea); (3) choleraic diarrhea (infantile cholera). In the simple form there are two to ten motions daily with offensive or sour stools, light brown to green in color, and containing undigested food and later mucus. In the acute inflammatory form the stools are numerous, at first fecal, later watery, usually contain mucus, and blood and pus may be present in nearly every stool, or entirely absent. Cholera infantum should be reserved for the fulminating form in which the stools are profuse and frequent, at first fecal in character, brown or yellow in color, and finally thin, serous, and watery; the stools first passed are very offensive, but are subsequently odorless.

Chief Signs.—Occurrence usually between six to eighteen months, most fre-

quently in summer; acute onset; colicky pains; slight fever, vomiting, and prostration (in simple diarrhea); more marked vomiting, high fever, abdominal pain and tenesmus, wasting, exhaustion, collapse (inflammatory diarrhea); incessant vomiting and marked prostration (infantile cholera).

Food Poisoning.—*Characteristics.*—In mild cases there is either diarrhea or constipation; in the moderately severe cases there are frequent, sometimes dysenteric stools; and in severe cases the diarrhea is severe and accompanied by much tenesmus; the stools are often of the choleraic type, or bloody, of a dysenteric character. Ordinarily, however, blood and mucus are rare.

Chief Signs.—Occurrence in several persons who have consumed the same food; sudden onset three to thirty hours after eating; general abdominal pain; nausea and vomiting; headache; cold sweats; variable temperature; bacteriological examination of the stools (*Bacillus enteritis* of Gaertner, *B. suipestifer*, or *B. ærtrycke*); serum tests with recognized strains.

Typhoid Fever.—*Characteristics.*—During the first week there is as apt to be constipation as diarrhea. Diarrhea is more common during the second week, and may not occur until the third or fourth week. The number of discharges ranges from three to eight or ten in twenty-four hours. They are usually abundant, thin, grayish-yellow, granular, of the consistency and appearance of pea-soup, and resemble very much the normal contents of the small bowel. The reaction is alkaline and the odor offensive. On standing, the discharges separate into a thin, serous layer containing albumin and salts, and a lower stratum consisting of epithelial debris, remnants of food, numerous crystals of triple phosphates, and microscopic or occult blood.

Chief Signs.—Occurrence usually in the autumn; insidious onset; headache, languor, bronchitis, tender and slightly distended abdomen; continuous fever (103 to 105° F.), rising and falling by "steps"; pulse, slow compared with the fever; rose-spots (appearing from the seventh to the tenth day on the back and abdomen); sordes; may be palpable spleen; prostration and delirium; often obstinate constipation; may be intestinal hemorrhage or perforation (3rd week); leukopenia; positive Widal (after the seventh to tenth day); positive blood culture (first week); duration four to six weeks; may be relapses, recrudescences, complications, sequelæ.

Bacillary Dysentery.—*Characteristics.*—From the onset there may be almost continuous, frequent, small stools, containing at first mucus, then blood and mucus, or clear blood. A few initial stools may empty the intestine of fecal matter.

Chief Signs.—Sudden onset; diffuse abdominal pain with tormina and tenesmus; variable temperature (high or low); pulse rapid and small; dry, inelastic skin; vomiting; muscular cramps; collapse; bacteriological examination of the feces (*Shiga-Flexner bacillus*); agglutination test.

Acute Amebic Dysentery.—*Characteristics.*—After a short period of slight diarrhea there are frequent evacuations of the bowel, and the feces is mixed with mucus, blood, and pus. During the first few days these stools contain some fecal matter, but later they consist of mucus, blood, and pus only. The number of stools may reach twenty or even thirty within twenty-four hours. In some cases large sloughs are passed.

Chief Signs.—Occurrence mainly tropical; acute onset; abdominal pain and tenesmus; moderate fever; emaciation; may be collapse with death, recovery, or

development of chronic diarrhea; presence of the *Entamæba histolytica* in the stools.

Cholera Asiatica.—*Characteristics.*—There is a stage of preliminary diarrhea, lasting for one or two days. The diarrhea increases and collapse ensues. The feces are at first yellowish in color but soon become grayish-white and look like turbid whey or rice-water; there are found in them numerous small flakes of mucus and granular matter and at times blood.

Chief Signs.—Occurrence in the tropics, especially in the early autumn; acute onset; vomiting; muscular cramps; progressive exhaustion; thirst; subnormal temperature; collapse (lasting three to twenty-four hours), followed by death or reaction; presence of the comma bacillus in the stools.

Acute Appendicitis.—*Characteristics.*—Although constipation is the rule, the attack may set in with diarrhea, particularly in children.

Chief Signs.—Se page 679.

Influenza.—*Characteristics.*—In the gastro-enteric form, which is rare in the United States, there is profuse diarrhea.

Chief Signs.—Acute onset; abdominal pain; may be nausea and vomiting; no respiratory symptoms; fever; slow pulse compared to the fever; may be jaundice; may be palpable spleen; marked prostration; short duration, followed by marked asthenia.

Mercury Poisoning.—*Characteristics.*—There is constant purging with very fluid, sometimes rice-water stools. Blood and fragments of mucous membrane are present in the feces.

Chief Signs.—History of ingestion of the poison; nausea and vomiting; stomatitis; salivation; abdominal pain and tenesmus; oliguria and albuminuria; collapse.

Less Common Causes.—Acute arsenic poisoning; trichiniasis; ptomain poisoning; acute gastritis; botulism; gangrenous stomatitis; purpura; smallpox; thrombosis of the mesenteric vessels; tuberculous meningitis; septicopyemia; gangrene of the lung; empyema; epidemic nephritis; paratyphoid fever; pneumococcic peritonitis (diarrhea is always a marked feature); puerperal fever; anthrax; uremia; exhaustion psychosis.

DIARRHEA, CHRONIC

(See also "Feces, Incontinence of," page 719.)

In chronic diarrhea special attention should be paid to the examination of the stools with reference to the amount of mucus, the presence of pus and blood, the occurrence of parasites, and the state of digestion of the food. Besides the routine physical examination and examination of the stools, it may be necessary to make a digital examination of the rectum, a sigmoidoscopic examination, a gastric analysis, and an x-ray study of the gastro-intestinal tract.

Chronic Enterocolitis (*Chronic Catarrh of the Intestines; Chronic Ileocolitis; Chronic Catarrhal Enteritis; Chronic Diarrhea; Chronic Intestinal Indigestion; Dysentery*).—*Characteristics.*—There is usually a persistent diarrhea extending over several years with frequent acute attacks associated with pain over the colon, and tenesmus. The stools are usually thin and watery, offensive, and contain considerable mucus, together with blood and pus at times. The number of stools vary

from three or four to eight or ten a day, though there may be periods of relief when the stools may become solid and the patient even constipated.

Chief Signs.—Chronicity; variability of symptoms, more pronounced when diarrhea occurs; weakness and depression; periodic, colicky abdominal pain; abdominal distention (enteritis); abdominal flaccidity and colonic tenderness (colitis); sigmoidoscopy.

Chronic Ulcerative Colitis.—*Characteristics.*—There is a history of an acute attack lasting eight to fourteen days, succeeded by a chronic stage which may continue for years, interrupted now and then by violent acute exacerbations of the symptoms. The stools are frequent, usually small, often passed with some straining, and contain mucus, blood, and pus. The movements are often bile-stained, and the blood may be present in the form of clotted lumps or uniformly mixed, the latter circumstance causing the motions to look like anchovy sauce.

Chief Signs.—Severe, diffuse colicky pain; may be tenesmus; abdominal distention and colonic tenderness; tongue clean or only slightly furred; temperature variable (high or low); rapid pulse; wasting, debility, anemia; rectal examination (ulceration of miliary type); x-ray.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—Diarrhea is sometimes a very troublesome symptom. It may be due simply to a catarrhal enterocolitis or to intestinal ulceration. It may come on early, but is more usually a symptom of the later stages. There is usually pain in the lower abdomen, most severe before the passage of the stool and after taking food. The stools may be very frequent, and at times may contain small quantities of blood. Mucus is usually mixed with the feces.

Chief Signs.—See page 412.

Chronic Constipation (*Intestinal Stasis*).—*Characteristics.*—There are three well-marked varieties that may give rise to persistent diarrhea. If the contents remain for an unusually long period of time in a dilated, prolapsed cecum, fermentation is produced which is followed by diarrhea. In another form the feces is impacted and channeled, and there are periods of diarrhea accompanied by abdominal pain and distention; stercoral ulcers may be present and increase the tendency to diarrhea. In spastic conditions there may develop an irritability of the lower bowel with the frequent expulsion of small round scybalæ or the passage of watery stools containing mucus.

Chief Signs.—See page 32.

Chronic Intestinal Obstruction (*Carcinoma of the Colon; Strangulation; Stricture; Impacted Feces*).—*Characteristics.*—While the obstruction is incomplete, alternating constipation and diarrhea occur, the latter due to irritation of scybalæ which accumulate above the obstruction. In association with the diarrhea there is abdominal distention, colic, and possibly tenesmus, with difficulty often in expelling gas. The stools are small, liquid, offensive, and at times contain mucus. As the bowel becomes almost completely blocked, dilatation is noted in the area above the obstruction, and in consequence the diarrhea is increased, inasmuch as liquid stools only can pass the obstructed area. "Morning diarrhea" may occur.

Chief Signs.—Chronic intestinal disturbance; intermittent colicky pain; visible peristalsis and distention; may be palpable tumor (due to intermittent spasm of the

intestine, or to growth, or a fecal mass) ; anemia, wasting, ill-health ; examination of the feces (blood, especially in carcinoma) ; sigmoidoscopy ; x-ray study.

Achylia Gastrica.—*Characteristics.*—Chronic diarrhea occurs in 30 per cent of the cases. At first there may be only occasional mild attacks of diarrhea. Soon, however, it becomes more frequent until it may be almost constant. In some instances it is of the morning type, most of the stools occurring before noon. The number of stools varies from a few to many a day. They are yellow in appearance, foul smelling, and contain undigested food remains, mucus, and even blood in protracted cases. The Schmidt diet test reveals undigested connective tissue. The diarrhea is controlled by hydrochloric acid.

Chief Signs.—May be severe epigastric pain ; may be wasting ; may be vomiting ; sore tongue ; appetite variable ; may be pernicious anemia or gastric carcinoma ; gastric analysis (complete absence of hydrochloric acid and ferments, very low organic acidity).

Mucous Colitis (*Mucomembranous Colitis*).—*Characteristics.*—While constipation is ordinarily a prominent symptom, diarrhea is occasionally observed, and may occur during the attacks of colic or when the colic has subsided, and when the discharges of mucus and feces have been passed into the lower bowel, thereby exciting active peristalsis. The liquid movements always contain much mucus in the form of shreds, bands, or even complete casts of the bowel.

Chief Signs.—See page 681.

Chronic Amebic Dysentery.—*Characteristics.*—The special characteristic is alternating periods of constipation and diarrhea. These may occur over a period of from six months to a year or more. The disease may follow an acute attack or may be subacute from the start, and gradually passes into the chronic stage. Alternating periods of improvement with attacks of diarrhea are the rule, and slight errors of diet are apt to be followed at once by an increase in the number of stools. The motions consist of mucus, blood, and fecal matter intimately mixed ; small masses of blood-tinged mucus may be passed.

Chief Signs.—History of residence in the tropics (though not necessarily) ; onset often gradual, not uncommonly an initial diarrhea ; chronicity ; may be hepatic abscess ; emaciation slight ; presence of the *Entamæba histolytica* in the stools.

Carcinoma of the Rectum.—*Characteristics.*—There is usually an initial period of constipation. Gradually, however, diarrhea sets in ; the movements, accompanied by straining, are usually small, at first soft, then liquid, then decomposed. When examined carefully, blood, mucus, and pus are demonstrable in the feces. The motions are often explosive and tend to occur in the early morning.

Chief Signs.—Constant passage of flatus through the anus ; pressure and fullness in the rectum ; sacrococcygeal backache ; anorexia ; emaciation ; digital examination revealing tumor and ulceration ; proctoscopy.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics.*—Attacks of diarrhea may occur from time to time and may be very severe and distressing.

Chief Signs.—See page 288.

Nervous Diarrhea.—*Characteristics.*—This form has its onset often after severe excitement, worry, or shock, the productive stimuli being either psychic or reflex, or both. The onset of an attack is often quite sudden, associated with a gurgling sensation in the abdomen, while the patient is still enjoying good health.

The stools are quite liquid in character, and are accompanied with but little annoyance in the abdomen. Between the attacks the patient experiences but little discomfort and can partake of all varieties of food with impunity. The attacks recur at shorter or longer intervals, at times so frequently as to render the patient extremely weak. In some cases the diarrhea tends to recur after meals (lienteric). Many cases of so-called "morning diarrhea" are of this type. A tendency to diarrhea may accompany the anxiety neurosis.

Chief Signs.—Absence of other causes; presence of nervous elements; maintenance of general health and nutrition.

Cardiac Decompensation (Heart-Failure).—*Characteristics.*—In myocardial insufficiency, due to the general congestion of the abdominal organs, diarrhea is a common symptom.

Chief Signs.—See page 642.

Chronic Interstitial Nephritis.—*Characteristics.*—Severe and even fatal diarrhea may develop as a part of the digestive disturbance.

Chief Signs.—See page 754.

Chronic Parenchymatous Nephritis (Chronic Bright's Disease).—*Characteristics.*—Diarrhea is one of the common gastro-intestinal disturbances and may be profuse.

Chief Signs.—See page 659.

Pernicious Anemia.—*Characteristics.*—In fully one-half the cases diarrhea occurs at some time during the course. Periodic attacks or crises are apt to occur with paroxysms of pain.

Chief Signs.—See page 643.

Primary Tuberculosis of the Intestine.—*Characteristics.*—Diarrhea may be exceedingly obstinate. It is similar to that of chronic enterocolitis, but hemorrhages occasionally occur. In advanced cases tuberculous peritonitis may be associated, and there are also often enlarged mesenteric lymph-nodes (tabes mesenterica).

Chief Signs.—Occurrence in children; may be localized abdominal pain or tenderness; may be fever; may be abdominal masses (sacculated peritonitis or tuberculous glands); may be tubercle bacilli in the feces (bovine or human form).

Sprue.—*Characteristics.*—The diarrhea of sprue is of two kinds, one chronic and habitual, and the other acute. The character of the diarrhea is an important diagnostic factor. In the mild type of the disease it consists usually of one copious movement in the morning of a pale gray color, pasty, fermenting, foul-smelling, and of acid reaction. The stools also contain undigested food. When the mouth lesions or the intestinal lesions become aggravated the diarrhea is increased to five or six movements a day and is very difficult to control.

Chief Signs.—Occurrence usually in the tropics; insidious onset; absence of fever; stomatitis; burning in the esophagus; belching; progressive emaciation; gastralgia; gradual diminution in the size of the liver; excessive intestinal fermentation; isolation of monilia from the tongue and feces; complement-fixation test.

Chronic Diverticulitis.—*Characteristics.*—Alternate attacks of constipation and diarrhea may occur in diverticulitis of the sigmoid and rectum, of the coprostatic type (irritation due to hard fecal masses). There may be passage of slime and blood.

Chief Signs.—Occurrence in middle age or later, in males more commonly, and

usually in stout individuals with chronic constipation; may be history of acute attacks (pain, tenderness, rigidity in the left lower quadrant, with or without a mass); tumor present in 50 per cent of cases, with a tendency to vary in size from time to time; x-ray study.

Chronic Myeloid Leukemia.—*Characteristics.*—Recurring attacks of diarrhea or dysentery may occur as part of the gastro-intestinal disturbances, most exhausting to the patient and occasionally accompanied by serious hemorrhages. A free diarrhea may reduce the size of the spleen.

Chief Signs.—See page 524.

Chronic Intestinal Indigestion (Celiac Disease).—*Characteristics.*—The bowels alternate between constipation and diarrhea, the former being more frequently present. With diarrhea the stools are often not very frequent, not exceeding four or five a day, but they are large, gray, green, or brown in color, acid in reaction, often frothy, offensive, and always contain undigested food. A stool in many cases is often excited by taking food. From time to time large quantities of mucus may be passed. The chemical analysis of the stools shows that the chief solid constituent is fat.

Chief Signs.—Occurrence in childhood; malnutrition; excessive intestinal fermentation with flatulence; abdominal distention; nervous symptoms.

Addison's Disease.—*Characteristics.*—Attacks of diarrhea are frequent and come on without obvious cause.

Chief Signs.—See page 670.

Pellagra.—*Characteristics.*—In some but by no means the larger number of cases there is a tendency to some looseness of the bowels; this appears mainly in advanced though not necessarily long-standing cases, but may be an early symptom. The looseness may be irregular and variable in degree, the stools becoming either soft or mushy, or watery in serious cases. The diarrhea is in some cases distinctly nocturnal and may be so severe as to lead to death through exhaustion.

Chief Signs.—See page 697.

Carcinoma of the Pancreas.—*Characteristics.*—Diarrhea follows the initial period of constipation and becomes more and more intense, and occasionally fatty stools are observed. The stools are pale or white, very offensive, and show, on cooling, solidified fat masses; microscopically they show an excess of fat globules, fatty acid crystals, and undigested muscle fibers and starch granules.

Chief Signs.—See page 734.

Less Common Causes.—Postoperative diarrhea (following cholecystectomy, gastro-enterostomy, pyloroplasty, appendectomy, resection of the bowel); idiopathic dilatation of the colon; cirrhosis of the liver; chronic pancreatitis; stricture of the rectum; chronic gastritis; chronic appendicitis; amyloid disease; diarrhea chylosa (bulky, yeasty, frothy, offensive but not watery); syphilitic ulceration of the rectum; tabes dorsalis; hill-diarrhea; polyposis of the colon; pancreatic cyst; obstructive jaundice; lead poisoning; *Trichomonas hominis* infection; abscess of the liver; cancer of the stomach; general tuberculosis (typhoid form); gout (retrocedent); hepatic distomiasis; methemoglobinemia; paroxysmal hemoglobinuria; pernicious malaria; *Strongyloides intestinalis* infection; Banti's disease; hypertrophic cirrhosis of the liver; carcinoma of the liver; dilatation of the stomach; ulcerative endocarditis; chronic arsenic poisoning; pseudoleukemia infantum; Raynaud's disease; rickets; syphilis of the liver; pancreatico-intestinal infantilism.

DROWSINESS, SOMNOLENCE, STUPOR

(See also "Coma," page 675.)

Drowsiness applies to a condition of slight sleepiness which is unpleasant and irresistible. It naturally accompanies fatigue and commonly follows a hearty meal. It may occur in the convalescence from febrile diseases and in the course of chronic wasting diseases.

The most common example, however, is probably that of an anemic young woman who suffers from diurnal drowsiness and nocturnal wakefulness. A combination of exhaustion with extreme cold produces intense drowsiness which places the individual in danger of being frozen to death. Somnolence is a condition more or less analogous to natural sleep, but occurring under unnatural circumstances. A severe fit of epilepsy is followed by a period of deep somnolence. The hypnotic trance is similar in some respects to natural sleep. Stupor differs from somnolence only in degree; it is a condition of deeper sleep from which the patient can be aroused, distinguishing it from coma, from which the patient cannot be aroused. Obese individuals may be inclined to drowsiness. "Lethargy" is synonymous with stupor. In states of asphyxia a short period of somnolence precedes the coma.

Encephalitis Lethargica (*Epidemic Encephalitis*).—*Characteristics*.—Somnolence is the most common and striking clinical symptom of the disease. The onset of the drowsiness is usually some days after the first symptoms have appeared. At first it is simply a drowsiness with a constant desire to sleep. In a few days there is more pronounced somnolence and lethargy. The patient may, as a rule, be aroused easily when apparently in a deep stupor, and when aroused shows a normal intellectuality, being well oriented, having a good memory, and often showing a surprising keenness of perception and realization of what is taking place about him. In some instances, especially in the abortive type and in the paralysis agitans type, there is a lighter degree of somnolence. After being aroused, the patient soon relapses into sleep. In a more advanced stage the sleep resembles coma. The sleep may be interrupted by delirium, tremor, exceptionally by convulsions.

Chief Signs.—Sudden onset with slight nasal discharge, fever and sweating, followed in a day or two by restlessness, anorexia, constipation, often vomiting, and possibly nocturnal delirium, subsiding in three to fourteen days, followed by abnormal drowsiness; drowsiness passing in a week into lethargy or stupor; may be headache; appearance of ptosis or other cranial nerve palsies; diplopia; may be meningeal symptoms; muscular hypertonia or rigidity; coarse tremor; choreo-athetoid movements; emotionalism; whispering, monotonous speech or dysarthria; may be paralysis; psychotic manifestations; moderate leukocytosis (nine thousand or higher); spinal fluid normal or slightly altered.

Cerebral Syphilis.—*Characteristics*.—Attacks of somnolence from which the patient may be aroused for brief periods only may be an early symptom in some cases, although intractable insomnia is probably more common.

Chief Signs.—See page 695.

Cerebral Abscess.—*Characteristics*.—In cases not running a very acute course, drowsiness with slow cerebration may be a striking symptom. Later stupor and

coma develop. The somnolence is apt to be increased during the evening rise of temperature. In the stage of activity and just before rupture, there is a typical mental hebetude, somnolence, and often delirium.

Chief Signs.—See page 84.

Cerebral Tumor.—*Characteristics.*—Certain tumors of the brain, especially those in the region of the floor of the third ventricle, are associated with early and persistent drowsiness and apathy. Elsewhere in the brain, tumors may also produce drowsiness at a late stage of the disease, probably from increased intracranial pressure, though in these cases the condition more nearly approaches coma and ultimately merges into it. The drowsiness is subject to exacerbations and remissions, and is usually more marked during the periods of severe headaches. When aroused the patient can give an account of himself and is oriented for time and place.

Chief Signs.—See page 687.

Concussion of the Brain.—*Characteristics.*—The symptoms vary from temporary giddiness or stunning, to collapse and death. In a well marked case there is somnolence or unconsciousness which is rarely complete, in that the patient may be partly aroused by stimulation, as by shouting and pricking the soles of the feet.

Chief Signs.—See page 10.

Purulent Leptomeningitis (*With Cerebral Abscess or Sinus Thrombosis*).—*Characteristics.*—If in the course of suppurative otitis media the patient develops mental hebetude with a tendency to somnolence, headache, and increase of temperature, this complication is probably present.

Chief Signs.—History of purulent otitis media, usually chronic; symptoms of meningeal irritation or compression (headache, slight fever, pressure pain, rapid or slow pulse, vomiting, stiffness of the neck, choked disk); may be doughy swelling and tenderness on pressure about one inch behind the ear canal; x-ray.

Serous Meningitis (*Idiopathic Internal Hydrocephalus, Angioneurotic Hydrocephalus*).—*Characteristics.*—In the chronic form somnolence may be an important symptom, associated with other symptoms similar to those found in brain tumors, such as headache and optic neuritis.

Chief Signs.—Slight fever; delirium; exophthalmos; spasm and rigidity of the muscles; cranial nerve paralysis; may be recovery (different from tumor); absence of x-ray findings.

Tuberculous Meningitis (*Basilar Meningitis*).—*Characteristics.*—The patient is drowsy but irritable in the second stage, namely that of increased intracranial pressure. As the disease advances the drowsiness and apathy deepen into coma from which it is impossible to arouse the patient, even swallowing becoming difficult or impossible. A striking feature is, however, that remissions occasionally occur.

Chief Signs.—See page 686.

Cerebral Thrombosis.—*Characteristics.*—Sleepiness and lethargy are among the premonitory symptoms.

Chief Signs.—See page 797.

Acquired Chronic Hydrocephalus.—*Characteristics.*—While the symptoms are curiously variable, attacks of somnolence or coma are suggestive symptoms.

Chief Signs.—Headache; slow pulse; gradually progressing optic neuritis, without focalizing symptoms; gradual blindness; mental changes; may be attacks of coma of long duration.

Acute Anemia (*Hemorrhage*).—*Characteristics*.—Drowsiness develops in proportion to the amount of blood lost and consequent cerebral anemia.

Uremia.—*Characteristics*.—A period of drowsiness usually precedes the development of coma.

Chief Signs.—See page 684.

Arteriosclerosis.—*Characteristics*.—In some cases drowsiness and lethargy may be notable symptoms together with alterations in temperament (failure of memory, irritability), but in other cases a persistent insomnia may be more distressing (cerebral arteriosclerosis).

Chief Signs.—See page 831.

Diabetes Mellitus (*Acidosis*).—*Characteristics*.—A period of drowsiness usually precedes the development of coma. Fatigue, lassitude, and irritability are often forerunner symptoms, and as acidosis develops, nausea, vomiting and occasionally diarrhea occur. A very characteristic form of dyspnea known as hyperpnea is encountered, in which breathing is deeper than normal without increase in the rate. As the acidosis becomes more intense, drowsiness is marked and coma supervenes which if not combated by insulin usually results in death within forty-eight hours.

Chief Signs.—See page 646.

Opium Poisoning.—*Characteristics*.—Large amounts of opium (morphin) produce deep dreamless sleep from which the patient may be aroused but which returns at once when he is left undisturbed. The sleep may deepen into torpor, and, if the dose has been sufficiently large, coma supervenes.

Chief Signs.—See page 676.

Acute Alcoholism.—*Characteristics*.—The narcotic effects of alcohol begin to be manifest from the very first and are developed according to circumstances, in proportion to the quantity absorbed. The individual passes from drowsiness or somnolence into stupor. The unconsciousness is rarely so deep that the patient cannot be aroused to some extent and in reply to questions he mutters incoherently.

Chief Signs.—See page 37.

Partial Myxedema (*Acquired Hypothyroidism*).—*Characteristics*.—Languor, rather than actual drowsiness, occurs; the patient is habitually sleepy, apathetic and stupid, and there is an associated amnesia and irritability, and in some instances a tendency to mental disorders. Exhaustion upon slight exertion is the rule.

Chief Signs.—See page 697.

Acromegaly.—*Characteristics*.—Somnolence is one of the symptoms of increased intracranial pressure in this disease and is associated with headache and ocular symptoms.

Chief Signs.—See page 696.

Aortic Regurgitation.—*Characteristics*.—An occasional symptom is the occurrence of periods of somnolence, merging into semi-stupor.

Chief Signs.—See page 453.

Cretinism.—*Characteristics*.—Habitual sleepiness and stupidity are common. The infant is unusually quiet and apathetic and seldom cries. It fails to show a normal interest in its surroundings or even in its parents.

Chief Signs.—See page 41.

Dystrophia Adiposogenitalis (*Fröhlich's Syndrome*).—*Characteristics*.—Drowsiness is often a symptom, possibly a secretion effect (hypothyroidism).

Chief Signs.—See page 752.

Trypanosomiasis (*African Sleeping-Sickness*).—*Characteristics*.—The third stage of the disease is one of complete decrepitude, and lethargy of a profound type is an outstanding symptom.

Chief Signs.—Occurrence in Africa; long period of latency and insidious onset; vacant expression; slow weak speech; shuffling gait; tremors of the tongue, hands, and feet; irregular fever (101-102° F); trypanosomes in lymph glands, less numerous in the blood; lymphocytosis.

Dementia Præcox (*Catatonic Form*).—*Characteristics*.—Following more or less vague symptoms, the so-called "catatonic stupor" comes on. In the extreme cases the patient lies perfectly still, without making any movement whatever and not reacting at all to stimuli. No attention whatever is paid to questions, absolute mutism being the rule, while sensory stimuli of very considerable strength may be applied without eliciting any response.

Chief Signs.—See page 740.

Less Common Causes.—Meningeal hemorrhage; cerebrospinal meningitis (when ependymitis develops); Adams-Stokes syndrome; chlorosis; influenza; idiocy and imbecility (stupidity); narcolepsy; mediastinal tumor; acute yellow atrophy of the liver; atony of the stomach (after meals); bromism; gangrene of the lung; hematoma of the dura mater; infantile hemoglobinuria; hemophilia; hypopituitarism; intermittent malarial fever (end of paroxysm); pernicious malarial fever; plague; spina bifida; typhus fever.

DWARFISM AND INFANTILISM

Dwarfism (microsomia, nanosomia) is a defect of growth resulting in small stature with deformity; and is distinguished from infantilism, which is a defect of development, determined by the childlike stature, proportions, and physiognomy, without deformity, the individual being in all other respects a well-developed human being.

Dwarfism may be due solely to spinal curvature from any cause, usually from tuberculous caries producing a kyphosis. Cases of both dwarfism and infantilism occur, also in which the various types and factors seem to be blended.

Rickets (*Rachitis*).—*Characteristics*.—The dwarfism is moderate, and is due partly to actual shortening of the bones of the lower limbs and partly to bending (bow-legs or knock-knees), associated with some form of spinal curvature.

Chief Signs.—See page 685.

Achondroplasia (*Chondrodystrophy*).—*Characteristics*.—The trunk is relatively long, with short limbs (chiefly the proximal segments), bow-legs, and lordosis.

Chief Signs.—See page 636.

Cretinism (*Sporadic and Endemic*).—*Characteristics*.—Growth is arrested and the bones are thick and short. The full-grown cretin rarely exceeds four feet. The head is large, neck short, breast flat, vertebral column curved, hands and feet spade-like, and abdomen prominent.

Chief Signs.—See page 41.

Dystrophia Adiposogenitalis (*Fröhlich's Syndrome*).—*Characteristics.*—There is great obesity with genital hypoplasia. The configuration, distribution of fat, and location of hairs is that of the female.

Chief Signs.—See page 752.

Osteitis Deformans (*Paget's Disease*).—*Characteristics.*—One of the first evidences sometimes is a decrease in height, due to bowing of the legs, sinking of the thorax toward the pelvis, and forward inclination of the head. This condition occurs in adults. If the vertebræ are involved there is actual shortening of the spine due to flattening of the vertebral bodies.

Chief Signs.—See page 637.

Cachectic Infantilism.—*Characteristics.*—Delayed development may occur from any chronic disease in childhood (congenital syphilis, hookworm disease, malaria, congenital or acquired heart disease, nephritis).

Chief Signs.—Existence of the primary disease; may be deficient development of the entire arterial system in the cardiac cases (anangioplasic infantilism).

Mongolism.—*Characteristics.*—The subject is short for its age, the general development being delayed.

Chief Signs.—Mongoloid type of countenance (close-set slanting eyes); small, brachycephalic head; short, thick hands and fingers; great relaxation of ligaments; idiocy.

Microcephaly.—*Characteristics.*—Dwarfism from impaired growth occurs, or the development of the body as a whole is arrested, causing infantilism (body proportionate to head).

Chief Signs.—Small head (never over seventeen inches in circumference) with sloping forehead, projecting nose, and receding chin (ferret or rat-like face); idiocy or imbecility.

Brissaud's Infantilism.—*Characteristics.*—There is a round chubby face, underdeveloped skeleton, prominent abdomen, large layer of fat over the entire body, rudimentary sexual organs, no growth of hair except on the head, and absence of the second dentition.

Essential Infantilism (*Ateliosis; Idiopathic Infantilism; Lorain type*).—*Characteristics.*—The figure at first sight resembles that of a child; when stripped, however, the lines are seen to be those of an adult. The head is proportionately small, the trunk well formed. There is no facial, pubic, or axillary hair, yet the sexual organs, though small, are well developed. The nose is often large. The intelligence is normal.

Congenital Syphilis.—See "Cachectic Infantilism," above.

Cardiac Infantilism.—See "Cachectic Infantilism," above.

Renal Infantilism.—See "Cachectic Infantilism," above.

Anangioplasic Infantilism.—See "Cachectic Infantilism" and "Essential Infantilism," above.

Progeria.—*Characteristics.*—There is incomplete development (primary spontaneous infantilism) associated with premature decay. These subjects are of short stature with the facies, attitude, baldness, wasting of the skin, arteriosclerosis, and general decrepitude of old age. They die of angina pectoris or other senile disease at eighteen years or earlier.

Pancreatic Infantilism (*Intestinal Infantilism*).—*Characteristics*.—Infantilism is associated with intestinal changes.

Chief Signs.—Looseness of the bowels; fatty stools; change in intestinal flora (preponderance of bifidus); increase in ethereal phosphates of the urine; improvement with pancreatic extracts.

Osteomalacia (*Mollities Ossium*).—*Characteristics*.—The dwarfism is due to the crumpling of the decalcified bones. If the onset is in childhood there is also some diminution of stature from arrest of bone growth.

Chief Signs.—See page 671.

Anosteoplasia (*Cleidocranial Dysostosis*).—*Characteristics*.—Moderate dwarfism is present from general impairment of bone growth, especially in the formation of the membrane bones.

Chief Signs.—Hereditary nature; skull rounded and broad; small face; delayed dentition; rudimentary or absent clavicles.

Less Common Causes.—Congenital hydrocephalus; porencephaly; imbecility; thymic infantilism; osteogenesis imperfecta; phocomelus; ectromelus.

DYSTOCIA

(*Difficult Labor*)

The duration of labor presents considerable individual variations, and is usually about six hours longer in primiparæ than in multiparæ. Generally speaking, the average for the former is about eighteen hours, of which sixteen are occupied by the first, one and three-quarters to two by the second, and a quarter to a half hour by the third stage of labor; for the latter it is about twelve hours, eleven of which are occupied by the first, and one by the second stage. Occasionally labor may be extremely rapid, while, on the other hand, a duration of twenty-four to thirty-six hours or even longer is not unusual. In dystocia the duration of labor may not only be prolonged, but the passage of the fetus down the birth canal is delayed or prevented by the causes given below.

Prolonged Labor Due to Uterine or Abdominal Insufficiency.—*Characteristics*.—There is no absolute standard by which the character of the labor pains can be gauged. Normally in the early stages of labor uterine contractions occur at infrequent intervals and gradually increase in frequency, intensity, regularity, and duration as its termination is approached; also a proper alternation between the contraction and relaxation of the uterus is a very important requisite for the successful accomplishment of delivery. Anomalies are often noted in the first stage of labor. In many instances the pains recur at long intervals and are so feeble in character that dilatation of the cervix is unduly prolonged, so that labor may drag on for days. Again, labor sometimes begins typically, and yet after a certain lapse of time the pains become less frequent and less intense, and labor comes to a standstill. In other instances, the contractions, although recurring at frequent intervals, are very painful and cramplike, but exert very little influence upon the dilatation of the cervix. As a rule, normal contractions set in after appropriate treatment and labor is terminated normally. In the absence of any mechanical obstacle, prolongation of the second stage of labor is due usually to deficient action of the abdominal muscles.

Chief Signs.—Absence of causes given below; may be history of repeated child-bearing.

Rigidity of the Cervix.—*Characteristics.*—In elderly primiparæ who have passed their thirtieth year, excessive rigidity of the cervix and its consequent tardy and imperfect dilatation may be the essential factor in the production of dystocia, especially when a further complication has been introduced by the premature rupture of the membranes. Occasionally still greater rigidity is encountered in patients who have suffered from inflammatory lesions, though such conditions rarely give rise to serious dystocia. Also, in certain cases of hypertrophic elongation of the cervix, spontaneous dilatation does not occur.

Chief Signs.—Age; palpation of the unyielding cervix in the absence of other causes of dystocia.

Dry Labor.—*Characteristics.*—Not infrequently the membranes may rupture before complete dilatation of the cervix, and occasionally even before the onset of labor. Dilatation of the cervix proceeds more slowly than normally. Ordinarily, labor sets in within two hours after rupture of the membranes, but exceptionally, several days or even a week or longer may elapse. The probability of intrapartum infection is increased.

Chief Signs.—Rupture of the membranes prior to complete dilatation of the cervix.

Contracted Pelvis.—*Characteristics.*—When the pelvic deformity is not “absolute,” but is sufficiently pronounced to prevent the head from entering the superior strait during the last few weeks of pregnancy or at the onset of uterine contractions, the course of labor is usually unduly prolonged; in the first stage, due to imperfect dilatation of the cervix, in the second, to the time required to so mold the head as to render possible its passage through the pelvic cavity. Premature rupture of the membranes, faulty uterine contractions, and tetanic contraction may add to the dystocia. There is also danger of rupture of the uterus, fistula formation, intrapartum hemorrhage, rupture of the pelvic joints, asphyxia of the fetus (from premature rupture of the membranes and interferences with the placental circulation, or premature separation of the placenta), prolapse and compression of the cord, intracranial hemorrhage in the fetus, and fracture of the fetal skull. If the conjugata vera measures 7.0 cm. or less spontaneous birth of the fully developed child is impossible, and is very unlikely if it measures 7.5 cm.

Chief Signs.—May be history or evidence of rickets, osteomalacia, spinal curvature, limp, dwarfism, chondrodystrophy, vertebral anomalies or evidence of pelvic deformity; may be history of previous difficult labor or cesarean section; inability of the presenting part to engage until after the onset of labor or not at all, and therefore free movability of the uterus; may be pendulous abdomen; may be abnormal presentation (face, breech, transverse); pelvimetry, giving the degree and character of the contraction.

Excessive Development of the Fetus.—*Characteristics.*—Dystocia may result, the difficulty being generally due to the fact that the head tends to become not only larger but harder, and consequently less malleable, with increasing weight; although it sometimes happens that after the head has passed through the pelvic canal without difficulty, the dystocia may be due to arrest of the unusually large shoulders either at the pelvic brim or outlet. Although, in the case of a normal

pelvis, a moderate increase in the size of the child is usually without great practical significance, when any degree of contraction exists such a condition may make all the difference between an easy and a difficult labor.

Chief Signs.—May be prolonged pregnancy; may be large size of one of the parents; careful palpation and Müller's method of impression.

Breech Presentation.—*Characteristics.*—Labor is usually slower than in vertex presentations and the prognosis for the child considerably worse, 10 to 15 per cent mortality in primiparæ, in whom more resistance is offered by the pelvic soft parts, resulting in delay in spontaneous delivery of the head. The breech forms a less efficient dilating wedge than the head, especially if the membranes rupture prematurely.

Chief Signs.—Abdominal palpation, revealing a hard, round, readily ballotable body occupying the fundus of the uterus, the back on one side of the abdomen and the small parts on the other, the irregular, freely movable breech above the superior strait if engagement has not occurred, or if it has, the pelvis filled by a soft mass; vaginal or rectal examination, revealing the tubera ischii, the sacrum with its spinous processes, the anus, and after further descent the external genitalia (the feet alongside the buttocks in complete breech, one or both feet in the vagina in footling presentation); auscultation of the fetal heart sounds through the fetal back at the level of the umbilicus.

Occipitoposterior Presentation.—*Characteristics.*—Labor is prolonged and instrumental interference required in 10 per cent, but the prognosis is not bad even when the occiput rotates into the hollow of the sacrum. The latter occurs in a small percentage of cases, particularly in women with funnel pelvis; ordinarily the head becomes markedly flexed and eventually the region just anterior to the large fontanel impinges upon the lower margin of the symphysis pubis, after which the occiput is slowly pushed over the anterior margin of the perineum by a movement of flexion; but occasionally partial extension persists and the brow appears at the vulva, the root of the nose impinges upon the symphysis, and by a movement of flexion the brow, bregma, and occiput successively pass over the perineum.

Chief Signs.—Abdominal palpation, revealing the resistant place of the back in the flank, the small parts on the opposite side and in front, the fundus occupied by the breech and the cephalic prominence on the side opposite the back; vaginal or rectal examination, revealing the large fontanel directed toward one iliopectineal eminence and the small fontanel opposite the opposite sacro-iliac synchondrosis; auscultation of the fetal heart in the flank.

Face Presentation.—*Characteristics.*—Labor is prolonged and fetal mortality markedly increased (14 per cent). In a small number of cases the face may engage or rotate into the hollow of the sacrum, and the birth of a normal-sized child is usually impossible.

Chief Signs.—Abdominal palpation, revealing the breech in the fundus, the back in the side and posterior portion of the abdomen and distinctly felt only in its upper portion, the small parts in the opposite side anteriorly, marked cephalic prominence on the side of the fetal back, and the fingers deeply depressible on the opposite side; vaginal or rectal touch, revealing the face in the birth canal; auscultation of the fetal heart sounds though the fetal small parts.

Brow Presentation.—*Characteristics.*—The length of labor is greatly increased

due to the great amount of molding of the fetal head necessary for delivery. The degree of difficulty and the prognosis depend largely upon the size of the fetus, as the mechanism of labor differs materially with the size. A large child cannot enter the birth canal without considerable molding of the head. This adds to the length and difficulty of labor and results in the birth of children with deformed heads.

Chief Signs.—As in face presentation, except less marked cephalic prominence on the side of the back and more resistance offered by the chin on the side of the small parts by abdominal palpation; vaginal or rectal touch, revealing at one end of an oblique diameter the large fontanel or portion of the skull just posterior to it, and at the other the orbital ridges, root of the nose, and the eyes.

Transverse Presentation.—*Characteristics.*—After a certain amount of descent, the shoulder becomes arrested by the margins of the superior strait, with the head in one iliac fossa and the breech in the other, and with the continuance of labor becomes firmly impacted in the upper part of the pelvic cavity. The uterus then contracts vigorously in the attempt to overcome the obstacle, but in vain. After a certain time the lower uterine segment becomes thinned out and gives way.

Chief Signs.—Unusually wide maternal abdomen with the fundus not reaching above the umbilicus; abdominal palpation, revealing the absence of a fetal pole from the fundus, the ballotable head in one and the breech in the other iliac fossa, and absence of a fetal pole in the superior strait; palpation of the ribs by vaginal examination in the early stages of labor.

Compound Presentation.—*Characteristics.*—Serious dystocia results if the arm (which is the usual complicating presenting element) retains its position, especially if it extends around the child's neck ("nuchal position").

Chief Signs.—Vaginal palpation of the hand, arm, foot, or other fetal part alongside the head during labor.

Tetanic Contraction of the Uterus.—*Characteristics.*—Occasionally in the first, and more frequently in the second stage of labor, the uterus may cease to relax at regular intervals, and pass into a condition of continued or tetanic contraction, which is very painful and exposes the child to considerable danger. Danger of rupture of the uterus becomes imminent.

Chief Signs.—Usually presence of a mechanical obstacle to the passage of the child; palpation of the tetanically contracted uterus.

Uterine Fibroids (*Fibromyomata of the Uterus*).—*Characteristics.*—At the time of labor the effect exerted by the myomata depends upon their size and situation. Interstitial myomata, developed in the cervix or lower uterine segment may so obstruct the pelvic cavity that normal delivery will be impossible. As a result of the uterine contractions a submucous fibroid may become partially separated from its bed and protrude from the cervix as a polypoid mass. Subserous fibroids rarely cause trouble, except when their large size leads to pressure symptoms, or when a pedunculated tumor prolapses into the pelvic cavity. Even when the tumor does not interfere with the course of labor by its size and position, it predisposes to the occurrence of abnormal presentations. Moreover, the mere presence of the tumor may interfere with the character of the uterine contractions.

Chief Signs.—May be hemorrhage at intervals during pregnancy; bimanual palpation, revealing the presence of firm nodules about or connected with the enlarged uterus.

Fetal Hydrocephalus.—*Characteristics.*—This condition often gives rise to serious dystocia, which if not promptly relieved will lead to rupture of the uterus and death of the patient from intra-abdominal hemorrhage. As a rule the condition is not recognized until several hours of fruitless second-stage pains have demonstrated the existence of an obstacle to delivery. Breech presentations are common.

Chief Signs.—External palpation of the enlarged and movable head above the superior strait or in the fundus of the uterus, sometimes giving a sense of fluctuation and a peculiar crackling sensation on pressure upon the skull; vaginal examination after dilatation of the cervix, revealing the enlarged head, gaping sutures, and fluctuation (unless a breech presentation).

Ovarian Tumor.—*Characteristics.*—This may give rise to serious dystocia at the time of labor, should pregnancy be uninterrupted. By rupturing during labor, a dermoid cyst may result in fatal peritonitis. When the tumor occupies the pelvic cavity it may lead to rupture of the uterus; or it may be forced into the vagina or even into the rectum. After labor gangrene of the tumor may cause peritonitis.

Chief Signs.—Often unsuspected; may be excessive enlargement of the abdomen or pressure symptoms; bimanual palpation, revealing the mass; may be failure of the presenting part to engage.

Less Common Causes.—Contraction of Bandl's ring; hour-glass contraction of the uterus; atresia of the vulva; thick septate hymen; hematoma or thrombi about the vulva; atresia of the vagina; stricture of the vagina; vaginal neoplasm; tetanic contraction of the levator ani muscle; conglutination orificii externa; cicatricial stenosis of the cervix; retroflexion of the uterus; antelexion of the uterus; ventrofixation of the uterus; retrofixation of the uterus; vaginofixation; incomplete prolapse of the uterus; abdominal tumor; hydatid cyst of the pelvis; tumor of the bladder; tumor of the rectum; hernia through the vaginal walls; fetal monstrosities and deformities; enlargement of the body of the fetus (ascites, neoplasms, etc.); bony tumors of the pelvis.

EDEMA, CIRCUMSCRIBED OR LOCAL

(For edema of the extremities, see under "Arms and Legs"; for general edema, see "Anasarca," page 659.)

Local edema accompanies such obvious local conditions as bites and stings, superficial abscesses, septic wounds, cellulitis and lymphangitis, furuncles, and external tumors.

Sprain.—*Characteristics.*—An edematouslike swelling occurs in the region of the affected joint, often with discoloration.

Chief Signs.—History of twist or turn of the joint; severe pain; tenderness; more or less loss of function; x-ray to exclude fracture.

Fracture.—*Characteristics.*—An edematous swelling soon appears in the region of the fracture, associated with ecchymosis.

Chief Signs.—History of injury; pain; loss of function; muscular spasm; deformity; preternatural mobility; crepitus; x-ray.

Tooth Abscess (*Alveolar Abscess*).—*Characteristics.*—There is edematous

swelling of the face, the situation depending on the tooth affected. If an upper incisor is involved, the swelling will appear first at the base of the nose; if the upper bicuspid or molar teeth are involved, the swelling may appear farther back in the cheek; if one of the lower teeth is diseased, the swelling will be most marked just below it, or the swelling may appear at the angle of the lower jaw.

Chief Signs.—See page 226.

Acute Osteomyelitis.—*Characteristics.*—The affected limb is edematous, hot, swollen, painful, and tender.

Chief Signs.—See page 303.

Erysipelas (Facial).—*Characteristics.*—Swelling and tension of the skin are marked within twenty-four hours, and during the second day the eyes are usually closed by edema. The swelling progresses as an advancing ridge, perfectly well-defined and raised.

Chief Signs.—See page 768.

Suppurative Arthritis.—*Characteristics.*—Edema and redness of the skin over the affected joint are present.

Chief Signs.—See page 737.

Mastoiditis.—*Characteristics.*—Edema and bulging of the upper posterior wall of the auditory meatus is a most important sign in acute cases. If the infection spreads there will be edema of the skin over the mastoid.

Chief Signs.—See page 138.

Empyema.—*Characteristics.*—Not infrequently there is edema of the chest wall. In empyema necessitatis or pulsating empyema local edema with some discoloration may be a sign of impending perforation.

Chief Signs.—See page 416.

Phlebitis.—*Characteristics.*—Edema and passive congestion occur in the region distal to the thrombus.

Chief Signs.—See page 614.

Suppurative Sinusitis.—*Characteristics.*—In the more acute cases swelling with heat and redness may occur over the affected cavities in inflammation of either the antrum or frontal sinus.

Chief Signs.—See page 53.

Aneurysm of Arch of the Aorta.—*Characteristics.*—Edema of one arm may occur from pressure, and if there is erosion of the bony thorax a brawny edematous and purplish or black swelling is present in the tissues over the local bulging or tumor.

Chief Signs.—See page 454.

Angioneurotic Edema (Quincke's Disease).—*Characteristics.*—Local edematous swellings of sudden appearance and transient duration characterize the disease. The hands, face, and genitalia are the parts most frequently affected.

Chief Signs.—Marked heredity; recurrent tendency; simultaneous gastrointestinal attacks (severe colic, pain, nausea, and sometimes vomiting); may be hemoglobinuria.

Mediastinal Tumor.—*Characteristics.*—Unilateral or bilateral edema associated with tortuosity of the superficial veins may occur, involving the face, neck, arms, or upper anterior chest-wall.

Chief Signs.—See page 432.

Perinephric Abscess.—*Characteristics.*—Edema or puffiness of the skin of the loin is frequently present.

Chief Signs.—See page 547.

Trichiniasis.—*Characteristics.*—Edema, a feature of great importance, may be early in the face, particularly about the eyes. Later, it occurs in the extremities when the swelling and stiffness of the muscles are at their height.

Chief Signs.—See page 660.

Less Common Causes.—Urticaria; parotitis; erythema nodosum; anthrax; erythromelalgia; gout; hepatic abscess; hydatids of the lung; dermatomyositis; neuritis; neuralgia; purulent pericarditis; pneumoperitoneum; sinus thrombosis; tubercle of the ribs; tumor of the chest-wall; caries of the sternum; "hysteria" (pseudolipoma; blue or white edema); intermittent hydrarthrosis; tabes dorsalis; purpura rheumatica.

EMOTIONS, ALTERATIONS OF

Any acute or chronic disease may cause a depressed emotional state. Emotion or feeling may be exalted, depressed, or deteriorated. Emotion like energy cannot be destroyed and consequently when an emotional reaction is excessive and not explicable by the situation, the source must be looked for elsewhere. If the reaction is pathological, it is from the unconscious. If the emotion is inadequate, then the energy must be looked for elsewhere, if pathological, in the phantasy realm.

General Paresis (*General Paralysis of the Insane; Dementia Paralytica*).—*Characteristics.*—In the early stages there is hyperexcitability or marked depression. The patient is apt to be touchy, surly, cross, or have even violent outbursts. Later on the mood is apt to be colored by delusions. Anger and laughter may follow one another in quick succession and a great variety of fleeting, changeable, often contradictory, emotional states are passed through.

Chief Signs.—See page 100.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics.*—In many cases the psychical signs are mild but there is a tendency both to psychomotor and emotional irritability; moodiness and sudden changes are frequent, and in marked cases manic-depressive phases may develop. The general picture of an acute delirium is a grave sign. The emotional state is much aggravated during a crisis.

Chief Signs.—See page 288.

Neurosis.—*Characteristics.*—Among the episodic phenomena are found disturbances of emotion, either exaltation or depression. In minor forms of so-called "hysteria," an attack may set in with emotional disturbances and be accompanied by laughing and crying. Patients suffering from a neurosis are usually low-spirited and despondent. Women are frequently emotional.

Chief Signs.—See page 738.

Menopause.—*Characteristics.*—The emotional content varies from slight irritability or depression of spirits to any form of psychoneurosis or psychosis.

Chief Signs.—See page 573.

Acute Alcoholism (*Drunkenness*).—*Characteristics.*—The mood of the drunken man is variable. There are two classes of individuals, the excited and

the depressed, the former closely resembling the manic phase of the manic-depressive in loquaciousness and hyperactivity, while in the latter the patient withdraws within himself, being sullen, morose, and disinclined to associate with others.

Chief Signs.—See page 37.

Manic-Depressive Psychosis.—*Characteristics.*—Emotional exaltation is one of the cardinal symptoms of the manic phase of this psychosis (the others being flight of ideas and psychomotor hyperactivity). Emotional depression is one of the cardinal symptoms of the depressive phase of this psychosis (the others being difficulty of thinking and psychomotor retardation).

Cerebral Thrombosis (*Softening*).—*Characteristics.*—An alteration of high and low spirits (emotionalism) not infrequently attends embolic or thrombotic cerebral softening. These patients laugh but usually cry on the slightest provocation.

Chief Signs.—See page 797.

Cerebral Tumor.—*Characteristics.*—So-called “hysterical” symptoms are frequently encountered. Careful analysis, however, shows no psychical conversions. Emotionalism is common.

Chief Signs.—See page 687.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—The temperament is peculiarly cheerful, combined with a tendency to slight childishness and an abnormal optimism as to the progress of the malady. The facial expression is blank or vacant, but may be broken in upon by smiles and laughter aroused by trivial circumstances.

Chief Signs.—See page 626.

Bulbar Paralysis.—*Characteristics.*—The patients are emotional and laugh or cry easily.

Chief Signs.—See page 799.

Pseudobulbar Paralysis.—*Characteristics.*—Such patients are excessively emotional, tending on slight provocation to laugh, or more frequently, to weep, with a peculiar “spastic” wail, and an unusual slowness of expressional movement.

Chief Signs.—See page 799.

Progressive Lenticular Degeneration.—*Characteristics.*—There is a state of euphoria, associated with restlessness, emotional instability, and tendency to laughter.

Chief Signs.—See page 800.

Less Common Causes.—Arteriosclerotic dementia; pellagra; chlorosis; pernicious anemia; mucous colitis; bromism; melancholia; acromegaly; diabetes mellitus; encephalitis; gout; lead poisoning; myxedema; chronic nephritis; epilepsy; cerebral arteriosclerosis; jaundice (depression); tuberculous meningitis (irritability in the first stage); chorea.

FECES, INCONTINENCE OF

In conditions of coma or partial unconsciousness from whatever cause, emptying of the bowel may occur at intervals, particularly if aperients are administered. Encephalitis lethargica is an example of such incontinence. During convulsions

there may be involuntary passage of feces (and urine). The clonic stage of an epileptic convulsion exemplifies this. In states of shock a similar emptying of the bowel frequently occurs. Severe typhoid states are also accompanied by loss of sphincter control. Rectal incontinence is normal in infants until the tonicity of the sphincter muscle has been acquired. Careless operations about the anus, as for hemorrhoids or fistula in ano, are followed by loss of sphincter control if the internal sphincter has been divided. Overdivulsion of the sphincter muscle in surgical procedures may rupture the muscle fibers also with the same result. Fecal incontinence often precedes death, is an occasional complication of old age, and is sometimes a symptom of acute febrile diseases.

Laceration of the Perineum.—*Characteristics.*—If the tear extends through the sphincter ani incontinence results.

Chief Signs.—See page 582.

Fracture-Dislocation of the Spine (*Compression Myelitis*).—*Characteristics.*—In all total lesions of the spinal cord and of the cauda equina the bladder and rectum are paralyzed, causing retention and later dribbling or overflow in the former, and incontinence in the latter. In such cases the anus remains patulous. Incomplete injuries of the cord above the sacral roots, by interfering with impulses passing from the cortex to the lumbosacral enlargement, lead to an unstable condition to which the term “precipitancy of defecation” is applied. The patient, though usually constipated, when called to the stool, is powerless to resist or delay the act.

Chief Signs.—See page 625.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—The “ataxic” or “tabetic rectum,” when present, manifests itself by one or more of the following symptoms: burning in the rectum, sphincteric irritability, lack of warning of an approaching stool, partial or complete fecal incontinence, hyperesthesia or anesthesia in the perirectal skin, and occasionally periodic tearing pain or sensation of weight in the rectum. The anorectal muscles are flabby, and the anus remains open after moderate dilatation. These symptoms may occur early in some cases.

Chief Signs.—See page 619.

Transverse Myelitis (*Syphilitic; Compression; Infective*).—*Characteristics.*—With the establishment of a complete transverse lesion of the cord there will be complete abolition of sphincter control, so that incontinence of urine and feces are present. In old dorsal myelitis a precipitate type of defecation may occur.

Chief Signs.—See page 620.

General Paresis (*General Paralysis of the Insane*).—*Characteristics.*—In the later stages of dementia, incontinence and involuntary evacuations occur.

Chief Signs.—See page 100.

Tumor of the Spinal Cord.—*Characteristics.*—The function of the rectum (and bladder) is interfered with very early in tumors of the lumbar and sacral cord or of the cauda equina.

Chief Signs.—See page 758.

Less Common Causes.—Congenital defects of the rectum and anus; ulcer of the rectum (syphilitic, tuberculous, bacillary, etc.); traumatic laceration of the sphincter; chronic alcoholism; procidentia recti; hemorrhoids (protruding internal); anal polyps; foreign body in the rectum; multiple sclerosis; botulism;

cholera; severe chorea; dysentery; Erb's spinal paralysis; hematomyelia; diphtheritic paralysis; ataxic paraplegia; strychnin poisoning; spinal meningeal hemorrhage; sunstroke; syringomyelia; tetanus; whooping-cough; intestinal worms; cerebral arteriosclerosis.

FLUSHINGS

(*Hot Flushes*)

Transient flushings accompanied by a sensation of heat and followed by a cold stage may be localized or may ascend from some lower region to the head, or vice versa, or may pass both upward and downward. They may be accompanied or followed by nausea, vomiting, fainting, a sense of suffocation, numbness, tremors, tinnitus, giddiness, palpitation, paresis. They are probably due to some disturbance of the sympathetic from endocrine imbalance, as they are a frequent accompaniment of menstruation and menstrual irregularities, the menopause, pregnancy, lactation and emotional states.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics*.—Unpleasant flushings of heat with erythema, forcible throbbing of the arteries, and profuse perspirations are often the greatest complaint.

Chief Signs.—See page 288.

Less Common Causes.—Tuberculous meningitis; chlorosis; constipation; typhoid fever; epilepsy (aura); dyspepsia; trigeminal neuralgia; neurosis; administration of amyl nitrite, nitroglycerin, belladonna; effort syndrome.

GAIT, ABNORMALITIES OF

The gait or manner of walking, together with the carriage, may give a leading suggestion as to the diagnosis. Affections of the bones, joints, muscles, vessels, and nervous system may modify the gait. In studying the gait, observe the entrance of the patient into the room; have him walk backward and forward, first with his eyes open, then shut; test the ability to stand erect with the eyes closed; have him walk a straight line on the floor, one foot being placed directly in front of the other. Observe the wear of the shoes, the point at which the friction is greatest, that at which it is least. In doubtful and complicated conditions, have the patient stand first on his toes and then on his heels; if he is able to do this have him attempt to walk, first on the toes, then on the heels. Have the patient walk in a circle in both directions, and test his walking as he goes up and down a short flight of stairs.

Any individual in whom one leg is shortened or lengthened will have a limp, but in most of these instances the cause is obvious (for causes of shortening of one lower extremity, see page 617). Marked ascites, large abdominal tumors, advanced pregnancy, and great obesity will produce a waddling gait, but in these conditions also the provocative factor is evident at once. Conditions of general weakness, and senility, give rise to a tottering, generally unstable gait. Any state of severe vertigo, as in diplopia or ear disease, may be accompanied by staggering or reeling.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics*.—The gait is ataxic. In typical cases it is unsteady and staggering, and the patient walks with his head bent down and his eyes fixed upon the ground. His feet are everted and he walks upon a wide base; the movements of the legs are excessive, the foot thrown out too high, and the heels come down sharply on the ground. Any attempt to stop suddenly, or to turn around, results in much staggering, and perhaps a fall. Darkness increases the difficulty in walking or may render it impossible. The patient may walk with a cane or two canes. The ataxia may be early, but is more usually a late symptom. Its onset is, as a rule, gradual, but sometimes extremely rapid. The earliest symptoms are noticed when the patient is deprived of the assistance of vision in walking, and when he attempts to walk along a line. Romberg's sign is present.

Chief Signs.—See page 619.

Hemiplegia.—*Characteristics*.—The affected leg is rigid and moves wholly with the body. It rotates outward, swinging in a semicircle, first from, and then, toward, the trunk. The shoes are worn on the outer side. The affected half of the body is rigid, weak, and paralyzed, so that the patient leans toward the affected side. The arm is held semiflexed and rigid. The patient often limps. When the victim of organic hemiplegia moves sideways toward the paralyzed side he does so well, but towards the healthy side badly, distinguishing the organic from the "hysterical," in which the side-gait is impaired towards either side.

Chief Signs.—See page 314.

Paralysis Agitans (*Parkinson's Disease; Shaking Palsy*).—*Characteristics*.—The patient moves forward with short, shuffling steps, and when he turns, his trunk moves slowly en masse, while his steps in walking tend to get faster and faster, as if he were chasing his own center of gravity (*festination*). When he festinates forward the condition is known as *propulsion*, and if backward it is called *retropulsion*. All the voluntary movements of the trunk and limbs are slow and stiff.

Chief Signs.—See page 546.

Infantile Paralysis (*Acute Anterior Poliomyelitis*).—*Characteristics*.—Shortening, deformity, and atrophy occur, depending upon the group of muscles permanently affected, and resulting in a limp with club-foot, flail-foot, or unilateral steppage gait.

Chief Signs.—See page 628.

Tuberculous of the Hip-Joint.—*Characteristics*.—A limping gait is a constant symptom in hip disease. The step is shorter on the affected side, the pelvis moving upon any attempt to move the thigh.

Chief Signs.—See page 602.

Multiple Neuritis (*Peripheral Neuritis*).—*Characteristics*.—When there is foot-drop (motor type) the steppage gait is the mode of progression. Each foot is alternately raised high, the toe thrown forward, the foot striking the ground forcibly, as if the patient were continually stepping over obstacles in his path. The two shoes are worn out equally at the toe in a sharp, clean-cut manner. In the ataxic type the gait resembles that of *tabes dorsalis*.

Chief Signs.—See page 648.

Cerebral Diplegia (*Little's Disease*).—*Characteristics*.—Both limbs describe

the arc of a circle during progression, each foot being swung outward and planted in front of the other with the production of a cross-legged or "scissors" gait, the trunk and upper limbs meanwhile being jerked about from side to side in the effort to move the spastic members forward.

Chief Signs.—See page 312.

Acute Alcoholism.—*Characteristics.*—The gait is staggering. The drunkard totters, reels, leans now forward, now backward, now to one side, now to the other, lurching indiscriminately but rarely falling.

Chief Signs.—See page 37.

Cerebellar Tumor.—*Characteristics.*—The gait is characterized by great unsteadiness, great irregularity, and a marked tendency to reel to one side. The body tends to run away with the legs.

Chief Signs.—See page 832.

Friedreich's Ataxia.—*Characteristics.*—The gait is irregular, the feet are set wide apart, and the movements are clumsy and incoördinate. As time goes on the patient may require the aid of crutches or sticks, but eventually walking becomes impossible.

Chief Signs.—See page 21.

Parkinsonian Syndrome of Epidemic Encephalitis.—*Characteristics.*—The gait is similar to that of paralysis agitans (see above).

Chief Signs.—See page 41.

Sciatica.—*Characteristics.*—There is lameness of one lower extremity, the leg being kept in a position of slight flexion, the thigh abducted. The foot is raised at the heel and the patient progresses on the ball of the big toe. There may be slight bending of the body toward the affected side and there is great deliberation in walking, due to pain.

Chief Signs.—See page 603.

Chorea (*Sydenham's Chorea*; *St. Vitus' Dance*).—*Characteristics.*—The gait is in some cases peculiar. Sometimes one foot seems to be momentarily entangled by an invisible obstacle which holds the child back for an instant, the forward progress then being hastily resumed; or his knee may give way suddenly, causing him to fall.

Chief Signs.—See page 746.

Arteriosclerosis.—*Characteristics.*—The gait of arteriosclerosis is sometimes called the senile gait. The legs are weak, the steps irregular, but not necessarily ataxic. There is unexpectedly a halting, or the legs may simulate a scissorlike movement or the feet so interfere one with the other as to render progress practically impossible.

Chief Signs.—See page 831.

Amyotrophic Lateral Sclerosis.—*Characteristics.*—The gait is spastic. The legs are slightly bent at the knees and decidedly bowed forward. The legs are adducted, with the knees almost overlapping, and the feet inverted. The steps are regular, but very short. The patient hardly walks at all, he shuffles ("creeping palsy"); the feet scrape along the floor.

Chief Signs.—See page 627.

General Paresis (*General Paralysis of the Insane*; *Dementia Paralytica*).—*Characteristics.*—In the later stages the gait becomes impaired, the patient trips

readily, has difficulty in going up or down stairs, and the walk may be spastic or occasionally tabetic.

Chief Signs.—See page 100.

Epilepsy.—*Characteristics.*—Many chronic epileptics have a peculiar slouching posture and gait.

Chief Signs.—See page 684.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—The gait may be spastic-paretic in character, the toes being scraped along the ground in walking. On the other hand, an element of instability is frequently superadded, giving rise to the spastic-ataxic gait, which is so commonly seen in this disease.

Chief Signs.—See page 626.

Congenital Dislocation of the Hip.—*Characteristics.*—In unilateral dislocation there is a peculiar lunge of the body toward the short (affected) side which is likened to the motion of walking down stairs. The pelvis is lowered on the weight-bearing side with an associated scoliosis. In bilateral dislocation there is a peculiar waddling or “sailor’s” gait with marked lordosis and a prominent abdomen.

Chief Signs.—See page 550.

Pseudohypertrophic Muscular Dystrophy.—*Characteristics.*—Instability in walking is the first symptom. Later the gait becomes characteristic. The child stands on a wide base with a lumbar lordosis and tends to lean backward. The feet are lifted from the ground with difficulty and the patient rolls from side to side in a sailorlike fashion, using his trunk muscles to raise and propel the legs. The gait is therefore “waddling” or clumsy. He may fall at any time.

Chief Signs.—See page 667.

Chronic Progressive Chorea (*Huntington’s Chorea*).—*Characteristics.*—When the condition is well pronounced, the entire body is in motion constantly. The legs, feet, and trunk move from side to side and place to place. The movement is rocking and lurching with flinging movements of the arms and scraping movements of the legs. The patient may come to a momentary standstill. The motion is described as “clamlike.”

Chief Signs.—See page 746.

Neurosis (“*Hysteria*”).—*Characteristics.*—The gaits are of the most varied types. In “hysterical” hemiplegia, the patient often pushes the paralyzed foot along the ground as if on a skate, or drags it helplessly along with its dorsum resting on the ground. If this is bilateral the patient is totally unable to walk or stand. The foot may be held in a position of talipes calcaneus, or the patient walk on the outer border of the foot; or one lower limb may be flexed acutely at the hip and knee, so that crutches are necessary. Again, there may be a zig-zag gait, or one leg may be thrown about with a wild flourish. The varieties are unlimited, but every one differs in some respect from the gait of organic disease.

Chief Signs.—See page 738.

Less Common Causes.—Inguinal abscess (limping); pelvic abscess (limping); perinephric abscess (limping); popliteal aneurysm (limping); gout (limping); sacro-iliac disease (limping); osteo-arthritis (limping); metatarsalgia (limping); cerebral tumor, frontal region (ataxic gait); spinal meningitis (spastic gait);

pernicious anemia (spastic or ataxic); intermittent claudication (painful limp passing off with rest); external popliteal nerve injury (unilateral drop-foot); flat-feet (waddling); myasthenia gravis (combination of waddling and steppage gait); syringomyelia (spastic gait); malingering (foot dragged or jerked along); achondroplasia (waddling gait); primary lateral sclerosis (spastic gait); rickets (bow-legs, knock-knees may slightly alter the gait); cretinism (head back, feet apart); coxa vara and coxa valga (limps of double waddling gait); primary combined sclerosis (spastic gait); ataxic paraplegia (reeling or ataxic gait); cerebellar abscess (reeling gait); familial spastic paraplegia (spastic gait); hematomyelia (spastic gait); occupation neurosis (spastic gait); cervical pachymeningitis (spastic gait); pellagra (spastic gait); progressive lenticular degeneration (spastic gait); spina bifida (spastic gait); spinal caries (spastic gait); syphilitic paraplegia (spastic gait); spinal cord tumor (spastic gait); vertebral tumor (spastic gait); bromism (tottering gait); hydrocephalus (tottering gait); progressive muscular atrophy (tottering gait); Korsakoff's syndrome (tottering gait); mollities ossium (tottering gait); chronic torsion spasm (dromedary gait with retropulsion); pseudotabes (reeling gait); multiple arthritis (waddling gait); scrotal affections (waddling gait); infantile scurvy (waddling gait); Tooth's paralysis (feet dragged); manganese poisoning (rooster gait); mercurialism (running gait); osteitis deformans (shuffling and tottering gait, with bent back and dropped head); saltatory spasm (jumping); Thomsen's disease (legs alternately stiff); myelitis, early stages (ataxia of the cerebellar type); bulbar softening (cerebellar ataxic gait).

GLANDS, ENLARGED LYMPHATIC

(See also under regional headings for causes of local lymphatic gland enlargement.)

Acute Lymphadenitis.—*Characteristics.*—The glands are palpably enlarged and tender. In severer cases the overlying skin becomes red, edematous, and adherent, and the glands are welded into one mass, which finally softens owing to the formation of pus.

Chief Signs.—Presence of an acute focus of infection in the region drained by the glands.

Chronic Simple Lymphadenitis.—*Characteristics.*—Although the glands are enlarged and perhaps tender they do not tend to mat together or to suppurate.

Chief Signs.—Presence of some source of continuous irritation in the area drained by the lymph glands.

Tuberculosis (*Tuberculous Lymphadenitis*).—*Characteristics.*—The enlarged glands show a strong tendency to adhere to each other and to the skin, and to undergo caseous degeneration. The glandular enlargement progresses and successively involves gland after gland in the group affected, which is most commonly in the neck.

Chief Signs.—See page 284.

Syphilis (*Syphilitic Lymphadenitis*).—*Characteristics.*—The glands are hard, discrete, not adherent to each other nor to the skin, do not tend to suppurate, and are neither painful nor tender. The enlargement in the primary stage is confined to the glands anatomically related to the sore; during the secondary period

the distribution is general, the epitrochlear and postcervical glands always being involved; in the tertiary period the glands may become gummatous.

Chief Signs.—See page 192.

Carcinoma (Metastatic).—*Characteristics.*—The glands grow rapidly and infiltrate the surrounding tissues, including the skin, muscles, etc. There is considerable pain and may be softening, with later discharge of a pultaceous material.

Chief Signs.—Presence of a primary growth in the territory drained by the glands or even at a distance; biopsy.

Hodgkin's Disease (Lymphadenoma).—*Characteristics.*—The neck glands are usually swollen first, later generalized swelling of the glands occurs. The glands are discrete and freely movable until the mass is very large. They are never adherent to the skin, and cause no reddening, ulceration, or caseation. The glands are soft when the growth is rapid, firm and hard when it is slow. Enormous glandular masses may form.

Chief Signs.—See page 285.

Acute Lymphatic Leukemia.—*Characteristics.*—Swelling of the glands, most commonly of the neck, is an early sign.

Chief Signs.—Frequency in males, usually under twenty; early angina, often ulcerative, involving the tonsils and pharynx; early hemorrhages, usually into the skin, or profuse nose bleeding; fever (103° – 105° F.); rapid anemia; may be leukopenia early (3,000 to 4,000), later may be leukocytosis (50,000 to 150,000); relative lymphocytosis (over 90 per cent).

Chronic Lymphatic Leukemia.—*Characteristics.*—The disease begins with a general enlargement of the lymph glands, first the cervical, then the axillary.

Chief Signs.—Occurrence usually in males over forty; chronicity; enlargement of the spleen; rarely hemorrhages or fever; may be intense pruritus, with ecthymatous patches; may be pigmentation of the skin, or localized leukemic cutaneous tumors; leukocytosis (60,000 to 100,000); lymphocytosis, chiefly small mononuclear (over 90 per cent).

Lymphosarcoma.—*Characteristics.*—There is enlargement of the lymphatic glands, tending to become generalized. They are of an invasive or infiltrating character, and have a peculiar regional way of spreading.

Chief Signs.—Rapid course; negative blood findings; absence of splenic enlargement; progressive anemia and emaciation; biopsy.

Less Common Causes.—Melanotic sarcoma (metastasis); alveolar sarcoma (metastasis); leukosarcoma; German measles; Still's disease; bubonic plague; status lymphaticus; arthritis deformans (may be general or local).

HICCUGH

Hiccough (hiccup or singultus) is a symptom caused by intermittent, sudden contraction of the diaphragm. It frequently has no clinical significance, occurring in healthy persons from trivial causes or spontaneously. Frequently the cause is reflex irritation of the diaphragm by some mild acute stomach disorder, such as the ingestion of unduly hot or cold or peppery food, ærophagia, gaseous distention of the stomach, ordinary dyspepsia (especially of the neurotic type), and following nursing in infants.

Alcoholism.—*Characteristics.*—Hiccough is often observed in acute and chronic alcoholism.

Chief Signs.—See page 37.

Acute Peritonitis.—*Characteristics.*—Hiccough is not uncommon.

Chief Signs.—See page 516.

Neurosis (*Functional or "Hysterical"*).—*Characteristics.*—Hiccough may be persistent throughout waking hours for weeks, at the rate of two or three a minute. The hiccough stops during sleep but may continue during meals.

Chief Signs.—See page 738.

Epidemic Hiccough.—*Characteristics.*—Clonic spasms of the diaphragm occur at the rate of five to twenty a minute, lasting from a few minutes to several hours over an illness of about seventy-two hours.

Chief Signs.—Epidemicity; occurrence in early winter; association with epidemics of influenza, encephalitis; absence of marked constitutional symptoms.

Acute Intestinal Obstruction.—*Characteristics.*—There may be hiccough when collapse supervenes.

Chief Signs.—See page 678.

Less Common Causes.—Gastritis; strangulated hernia; epidemic (lethargic) encephalitis; typhoid fever; carcinoma of the stomach; caseous glands (mediastinal); hemorrhage; pericarditis (adhesive or with effusion); amebic dysentery; helminthiasis; cholera; appendicitis; collapse; diabetes; gout; fibrous mediastinitis; mediastinal tumor; cardiac decompensation; softening of the medulla oblongata; meningitis; chronic nephritis; uremia; diaphragmatic pleurisy; Addison's disease; dysmenorrhea; erysipelas; gangrene of the lung; hepatitis; hydrocephalus; acute pancreatitis; septicemia; spinal injury; shock; epilepsy; wax in the meatus; peroneal paralysis; varicose veins; carcinoma of the uterus; carcinoma of the colon; carcinoma of the liver; abscess of the liver; gumma of the liver; carcinoma of the esophagus; intracranial tumor (particularly in the posterior fossa).

IMPOTENCE

Impotence in the male is the inability to perform the act of coitus from absence of erection. It may be due to obvious or mechanical defect, such as absence of the penis or congenital or acquired malformation. Occasionally it may be an early symptom of some constitutional disease. The word impotence is not synonymous with sterility, which implies absence of spermatozoa necessary to fecundation. Long-continued sexual excesses may produce impotence, also drug habits and chronic alcoholism. When a man is thoroughly drunk he is impotent. In cachectic states impotence is usually inevitable. In the female, absence of strong sexual feeling during coitus does not assume the serious aspect it does in the male. The response to sexual excitement may not develop for months or years after marriage, sometimes not until one or more children are born. The wife may not be in physical condition to respond, she may have some chronic malady which so saps her strength that she has not the vitality for this function. Consequently, any local or general disease may be the cause.

Prostatitis (*and Vesiculitis*).—*Characteristics.*—Premature and painful ejaculations, incomplete or painful erections, nocturnal emissions, and other disturb-

ances of the sexual function occur, due to pathological changes in the veru montanum, utricule, or ejaculatory ducts.

Chief Signs.—See page 556.

Functional Impotence (*Psychic Impotence*).—*Characteristics.*—There is inability to obtain erections at the right time and emission may occur on slight excitation. This form may occur in the first few days of married life.

Chief Signs.—Absence of physical cause; tendency to recovery.

Diabetes Mellitus.—*Characteristics.*—Impotence is common and may be an early symptom.

Chief Signs.—See page 646.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—Ability to obtain penile erection may be lost early, before definite signs of the disease are manifest.

Chief Signs.—See page 412.

Multiple Sclerosis.—*Characteristics.*—The sexual functions are usually impaired.

Chief Signs.—See page 626.

Prostatism.—*Characteristics.*—A combination of age and disease usually diminishes or obliterates sexual power. Exceptionally the congested prostate excites abnormal erections.

Chief Signs.—See page 556.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—Impotence is not uncommon in the pre-ataxic stage and is usual in the ataxic stage.

Chief Signs.—See page 619.

General Paresis.—*Characteristics.*—Sexual power is often lost in the early stages, but in other cases it is increased almost to the extent of satyriasis. In the later stages it is lost.

Chief Signs.—See page 100.

Less Common Causes.—Acromegaly (in advanced cases); ataxic paraplegia; amyotrophic lateral sclerosis; bromism; spinal cord compression; dystrophia adiposogenitalis; hypopituitarism; lead poisoning; transverse myelitis; pituitary tumor; pernicious anemia (with severe cord changes); Erb's syphilitic spinal paralysis.

INSOMNIA

(*Sleeplessness*)

Insomnia or the inability to obtain the proper amount of sleep, both in children and adults, may be due entirely to faulty habits of hygiene, such as: some sudden change in the routine of the day or evening; the use of noisy, airless, or overheated bedroom; the use of too many bedclothes or too few; going to bed on too full or too empty a stomach; drinking strong tea or coffee too late in the day; the overuse of tobacco, alcohol or drugs. In infants it is most often due to indigestion, hunger, or bodily discomfort, though in rarer cases it may be due to disease. At all ages insomnia may accompany the early stages of many febrile diseases.

There is a large class of cases of insomnia due to some obvious extrinsic cause,

chief of which are pain, cough, dyspnea, vomiting, delirium, dementia, frequent micturition, diarrhea and itching. Under this group will come emotional insomnia, more often the result of grief than joy.

In the most varied acute disorders, slight or severe, the occurrence of insomnia is a commonplace, but here it passes off with the amelioration of the disorder and is never of great diagnostic importance. Overfatigue, especially from mental overwork, is a frequent cause among busy professional and business men. Toxic insomnia is common.

Some cases are associated with gastric or intestinal fermentation, and especially with dilatation of the stomach. The sufferer wakes after an hour or two, perhaps after a horrible dream, with palpitation, profuse sweating, or gastric uneasiness, and a sinking feeling with craving for food.

Finally, especially in adults, insomnia may accompany some chronic disease in which the sleeplessness may be one of the earliest symptoms, or the other symptoms that are present may have escaped the patient's notice, and therefore be of diagnostic importance. The following list is intended to include this category.

Cerebral Syphilis.—*Characteristics.*—Insomnia may occur from headache, or without it, though instead of insomnia there may be mental apathy and attacks of somnolence.

Chief Signs.—See page 695.

Lobar Pneumonia.—*Characteristics.*—Insomnia is frequent, often severe and extremely troublesome to treat. It is aggravated by, but may be entirely independent of pain, cough, or dyspnea.

Chief Signs.—See page 412.

Uremia.—*Characteristics.*—There may be persistent insomnia which may continue until death, with few other symptoms.

Chief Signs.—See page 684.

Chronic Pulmonary Tuberculosis (Phthisis).—*Characteristics.*—Insomnia of mild grade is not uncommon, and the sleep is often broken by night sweats and attacks of coughing.

Chief Signs.—See page 412.

Essential Hypertension.—*Characteristics.*—Among the nervous symptoms of hypertension, insomnia often occurs and may be persistent and distressing. The patient cannot lie on his left side on account of the throbbing in his ears, which also adds to his sleeplessness.

Chief Signs.—See page 668.

Arteriosclerosis.—*Characteristics.*—Insomnia is a symptom frequently observed in those cases in which cerebral arteriosclerosis is marked. It is probably due to the cerebral anemia. Nocturnal restlessness may be associated with morning somnolence.

Chief Signs.—See page 831.

Hyperthyroidism.—*Characteristics.*—During the crises which occur there is insomnia with extreme irritability, restlessness, and emotionalism.

Chief Signs.—See page 288.

Aortic Regurgitation.—*Characteristics.*—Disturbed sleep with bad dreams is more common in this than in other forms of valvular disease.

Chief Signs.—See page 453.

Cardiac Decompensation (Incipient).—*Characteristics.*—The sleep may be restless, disturbed by dreams and nightmares, and frequently the patient awakes suddenly with a start.

Chief Signs.—See page 642.

Essential Hypotension.—*Characteristics.*—In extreme cases patients often fall asleep when sitting upright and suffer from insomnia when they go to bed.

Chief Signs.—See page 670.

Manic-Depressive Psychosis.—*Characteristics.*—In the manic stage or stage of excitation, the flight of ideas, psychomotor hyperactivity and emotional exaltation may prevent the patient from sleeping.

Chief Signs.—See page 719.

General Paresis.—*Characteristics.*—The psychic changes of the disease may commence in various ways, one of which is with the occurrence of “neurasthenic” symptoms of which insomnia, mild depression, indecision of action, and sometimes irritability and headache predominate.

Chief Signs.—See page 100.

Actual Neurosis (Anxiety Neurosis and “Neurasthenia”).—*Characteristics.*—Among the symptoms of general irritability which these patients display there may be auditory hyperesthesia which is frequently a cause of insomnia. Very frequently the nocturnal frights (pavor nocturnus) determine a second form of insomnia in the sphere of their anxiety neurosis.

Chief Signs.—See page 738.

Rickets.—*Characteristics.*—The child sleeps badly and is irritable and restless. These symptoms may appear early in the disease.

Chief Signs.—See page 685.

Cirrhosis of the Liver.—*Characteristics.*—Sleeplessness is frequent, being accompanied in severer cases with nocturnal delirium.

Chief Signs.—See page 521.

Tuberculosis of Hip-Joint.—*Characteristics.*—In the early stages sleep may be disturbed by sudden, starting pains; the child goes off to sleep only to be awakened almost at once by sudden shooting pains in the leg and hip.

Chief Signs.—See page 602.

Pericarditis with Effusion.—*Characteristics.*—Insomnia and restlessness are common and in severe cases may be extreme.

Chief Signs.—See page 755.

Less Common Causes.—Paralysis agitans; pernicious anemia; cerebral tumor; malingering; dengue; chronic gastritis; trichiniasis; constipation (especially with full rectum); dilatation of the stomach; secondary syphilis; pellagra; cocaineism; delirium tremens; melancholia; meningitis; teething.

ITCHING

(*Pruritus*)

Itching or pruritus may be local or general. The special itchings, such as pruritus ani and pruritus vulvæ, are considered under their particular regions. Many skin diseases with visible lesions are accompanied by itching of greater or

less degree, in which cases a prompt examination of the skin will reveal the cause of the itching. When the skin is desquamating from any cause, itching may be complained of. In other cases the skin also may be at fault, and yet there may be no objective lesions. In all other cases some constitutional malady must be sought for.

Eczema.—*Characteristics.*—Itching is seldom missing and if so, its place is usually taken by some paresthesia. It may vary in degree from slight to intense and it may be constant or frequently intermittent.

Chief Signs.—Chronicity; appearance in the beginning of erythema, papules, vesicles, or pustules; redness, thickening, scaling or crusting of involved areas; sticky exudation with formation of crusts; occurrence of fissures; tendency to involve certain areas (hands, face, scalp, back of ears, genitalia, flexures, legs); heat, and burning.

Scabies (*Itch*).—*Characteristics.*—The first evidence of the disease is itching, at first being limited to the region where the parasites have gained access. Later it becomes more or less general, but always more pronounced in certain situations where the lesions are prone to appear, especially the fingers, hands, wrists, axillary folds, lower abdomen, genitalia, cleft of the nates, inside of thighs, ankles, and feet.

Chief Signs.—History of infection; characteristic distribution; presence of the "burrow" (tortuous, straight, or zigzag, dotted, slightly elevated, dark gray or blackish, threadlike linear formation one-eighth to one-half inch long, elevated especially at one end, in which is seen a minute whitish or dark grayish dot).

Pediculosis (*Capitis, Corporis, Pubis*).—*Characteristics.*—Itching is always present and may vary from a slight degree in some cases of head and pubic lice, to extremely intense itching in pediculosis corporis and some types of pediculosis pubis.

Chief Signs.—Presence of the lice; characteristic eggs (nits) on the hairs in capitis and pubis types.

Urticaria.—*Characteristics.*—Itching may precede and always accompanies the lesions in urticaria. The itching is usually quite marked and accompanied by other paresthesiæ, especially stinging and burning.

Chief Signs.—Sudden onset; presence of evanescent whitish, pinkish, or reddish elevations or wheals, somewhat variable as to size and shape, attended besides itching, with stinging and pricking sensations.

Lichenification (*Neurodermite*).—*Characteristics.*—There is an oval or irregular patch of darkened and thickened skin, located on the neck, leg, scrotum, or arm, which itches intensely from time to time. It is a chronic lesion of neurogenic origin.

Chief Signs.—See page 635.

Pruritus Hiemalis (*Winter-Itch*).—*Characteristics.*—The itching usually comes on at night when the patient is disrobing or just after retiring. It is frequently intense, lasting some minutes to an hour or more. It may recur on rising.

Chief Signs.—Absence of skin lesions except those of scratching; occurrence in winter months.

Pruritus Senilis.—*Characteristics.*—Itching is of variable degree, from slight to intense, and accompanies the involutionary changes in the skin.

Chief Signs.—Presence of atrophic changes in the skin; absence of lesions except those of scratching.

Pruritus Balnei (*Bath Pruritus*).—*Characteristics*.—Itching or burning sensations follow bathing. It is commonly situated on the legs from the hips down and occasionally in the forearms. The attack lasts from several minutes to half an hour or more, being relieved by dressing and walking about.

Chief Signs.—Absence of lesions.

Diabetes Mellitus.—*Characteristics*.—Extremely marked and obstinate itching occurs, occasionally general but more often localized at the folds over the flexor surfaces near the joints or on the genitalia.

Chief Signs.—See page 646.

Chronic Interstitial Nephritis.—*Characteristics*.—Intolerable itching of the skin may be present.

Chief Signs.—See page 754.

Uremia.—*Characteristics*.—Intense itching of the skin may occur as a nervous manifestation in uremic states.

Chief Signs.—See page 684.

Jaundice.—*Characteristics*.—In the pre-icteric stage there may be itching, and in all of the more chronic forms itching is a most distressing symptom.

For causes of Jaundice, see below.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics*.—Pruritus may be a severe and persistent symptom.

Chief Signs.—See page 288.

Less Common Causes.—Prurigo; seborrhea; morphinism; intestinal helminthiasis; pregnancy; lichen planus; susceptibility to wool; tabes dorsalis; meralgia paræsthetica (thigh); myelitis; pityriasis rubra; psoriasis; prickly heat; dermatitis herpetiformis; dermatitis gestationis; application dermatitis (saw-dust, soap, etc.); lichen urticatus; mycosis fungoides; pityriasis rosea; cheiopompholyx; chilblain; tinea marginata; bites and stings; drug rash; erythema; gout; food allergy (strawberries, crabs, etc.); angioneurotic edema; cervical rib (hand); multiple sclerosis; meningeal hemorrhage, spinal; menopause; pemphigus; pinta; polycythemia; scleroderma; meningitis; spondylosis; syringomyelia; tetany; variola; arteriosclerosis; Hodgkin's disease (sometimes early); chronic lymphatic leukemia.

JAUNDICE

(*Icterus*)

(See also "Pallor or Sallowness of the Face," page 31.)

Jaundice occurs (1), from obstruction of the bile-ducts with reabsorption of the whole bile; (2), from blood destruction with increased liberation of pigment in the blood stream; (3), from injury to the liver cells with suppression of the liver function. In the first group, the hepatogenous jaundice, there is bilirubinemia, bilirubinuria, and cholemia, and the stools are clay-colored. In the second group, the hematogenous jaundice, there is acholuria and bile in the stools, with anemia. In the third group, the toxic jaundice, bile-salts are not secreted. The skin and conjunctivæ vary in color from a lemon-yellow to a deep olive-green or bronzed hue. A mild jaundice is known as an icteroid tint.

Cholelithiasis (*Gall-Stones Obstructing the Common Bile-Duct*).—*Characteristics*.—In rare instances a stone tightly corks the common duct, causing permanent

occlusion and deep and enduring jaundice without septic features. More commonly there may be a series of stones in the common duct, one of which is freely movable, or a stone (ball-valve stone) in the ampulla of Vater; in these cases there are distinct variations in the intensity of the jaundice which may deepen after each paroxysm (ball-valve stone), and there may be symptoms of sepsis due to infective cholangitis.

Chief Signs.—History of gall-stone colic; gall-bladder not enlarged; presence of bile in the feces (incomplete obstruction); may be paroxysms of chills, sweats, fever (hepatic intermittent fever of Charcot); x-ray.

Catarrhal Jaundice (*Acute Catarrh of the Bile-Ducts*).—*Characteristics.*—This is a most common cause of jaundice, in young people the most common of all. The jaundice develops almost suddenly in many cases, and as there may be neither pain nor distress, the patient's friends may first notice the yellow tint, or the patient himself may observe it in the looking-glass. In other cases the jaundice may develop concomitantly with dyspeptic symptoms. The skin has a bright yellow tint; the greenish bronze color is never seen in the simple form. In mild cases the jaundice usually disappears at the end of one to three weeks, but sometimes it lasts as long as eight weeks or even more.

Chief Signs.—Occurrence usually in children and young adults, sometimes in epidemics; nausea and sometimes vomiting, headache, furred tongue, and malaise (may subside when the jaundice appears); variable temperature (normal or 101° to 102° F.); bile pigment in the urine; clay-colored stools; constipation; itching; slow pulse; mental depression; bile-tinged serum; liver slightly enlarged and tender; may be palpable gall-bladder; absence of pain or biliary colic.

Carcinoma of the Bile-Ducts.—*Characteristics.*—An early intense and persistent jaundice may occur (69 per cent). It may become very deep, almost black.

Chief Signs.—Occurrence after forty; enlarged gall-bladder or palpation of a mass in the gall-bladder region; pain and tenderness on pressure, persistent; vomiting; constipation or diarrhea; pruritus; pulse not slow; dark-colored urine containing bile; pale feces; emaciation and cachexia.

Icterus Neonatorum (*Four Types*):—

1. *Symptomatic or Physiologic.*—*Characteristics.*—Mild jaundice occurs in 30 to 80 per cent of infants, coming on usually on the second or third day, and lasting from one to two weeks.

Chief Signs.—Absence of constitutional disturbance; absence of bile in the urine; presence of bile in the feces.

2. *Septic Infective Jaundice.*—*Characteristics.*—The jaundice is more pronounced and increases.

Chief Signs.—Fever; fretfulness; vomiting; green stools; sometimes convulsions.

3. *Obstructive Jaundice.*—*Characteristics.*—The jaundice is present at birth or appears within a week or two and speedily deepens.

Chief Signs.—Clay-colored stools; bile in the urine; emaciation; hemorrhages; enlargement of the liver and spleen; death.

4. *Syphilitic Jaundice* (*Interstitial Hepatitis*).—*Characteristics.*—Jaundice develops on the second or third day and persists.

Chief Signs.—Impaired nutrition; enlarged liver and spleen; stools light-colored but containing bile; bile in the urine; improvement with specific therapy.

Carcinoma of the Liver.—*Characteristics.*—Jaundice, which is present in at least half of the cases, is usually of moderate degree unless the common duct is occluded, since it is seldom due to masses in the liver itself but rather to involvement of the portal glands. If there is much involvement of these glands, the skin, which is at first a deep orange, becomes greenish, and finally a dark olive-green tint.

Chief Signs.—Occurrence in persons over forty years of age; enlarged, hard, slightly tender liver with a nodular, irregular edge, the nodules often umbilicated; moderate ascites (in 60 per cent); nodules at the umbilicus and along the linea alba; usually fever, about 100° F.; spleen not enlarged; anorexia and gastric disturbances; progressive emaciation; may be evidence of a primary growth elsewhere; duration three to twelve months.

Syphilis of the Liver.—*Characteristics.*—During the early part of the secondary stage and concurrently with the rash on the skin, jaundice may come on and sometimes becomes very severe. The combination of the roseola and the jaundice imparts a very striking appearance. There is no pruritus, seldom any gastrointestinal disturbance, and bile is usually absent from the urine. In the tertiary stage large gummata may form and, if there be one in the portal fissure, may cause jaundice. A syphilitic cirrhosis sometimes occurs and may be accompanied by a slight jaundice.

Chief Signs.—May be history of syphilis; enlargement of the liver; pain in the right hypochondrium and epigastrium; may be palpable spleen; positive Wassermann; therapeutic test.

Carcinoma of the Pancreas.—*Characteristics.*—Severe, progressive, intense jaundice is an early sign of carcinoma of the head of the pancreas.

Chief Signs.—Anorexia; vomiting; pain; marked cachexia and weakness; diarrhea; cretorrhea and steatorrhea; gall-bladder enlarged but not tender; palpable tumor mass in some cases.

Acute Yellow Atrophy of the Liver.—*Characteristics.*—Jaundice is one of the earliest symptoms, and toward the last the skin becomes green.

Chief Signs.—Occurrence between twenty and forty years, mainly in females (pregnancy). First stage: Gradual onset with jaundice and vomiting, lasting five days. Second stage: Severe nervous symptoms (headache, twitching, convulsions or delirium, coma); intractable vomiting; petechiæ and hemorrhages (skin, mucous membranes, retinæ); cholemia with typhoid state (rapid pulse, dry tongue, etc.); variable temperature; severe constipation; progressive diminution of liver dulness; scanty urine with bile, albumin, casts, ammonia-nitrogen, leucin, and tyrosin.

Yellow Fever.—*Characteristics.*—Jaundice is a common though variable manifestation of all cases. As a rule it varies with the severity of the disease, although it may be of an intensity in light cases out of proportion to the other symptoms of the disease. It usually appears on the second or third day, reaching its maximum about the tenth day, continuing well into convalescence. The blood plasma and urine are often markedly pigmented. Skin itching does not occur. In most cases the stools are dark brown, containing much blood.

Chief Signs.—Occurrence in the tropics, often in epidemic form in the late summer months; sudden onset with rigor, headache, rapid pulse, pyrexia, dry skin. First stage: Continued pyrexia, one to three days, with falling pulse rate; flushed face with an icteroid tint; albuminuria; vomiting; constipation; pains in

the body and limbs. Second stage: Normal temperature for one to three days, with further slowing of the pulse; may be anuria and black vomit. Third stage: Secondary fever for a week or more, the pulse rate continuing to fall; intense jaundice; black vomit; scanty urine and increased albuminuria; abdominal pains and melena; extreme prostration and weakness.

Hypertrophic Biliary Cirrhosis (*Hanot's Disease*).—*Characteristics*.—Jaundice makes its appearance early in the disease and is permanent, though it varies in depth at different times, the color being sometimes light and then dark, but ever tending to increase until the end, the skin becoming even greenish, or very dark brown.

Chief Signs.—Occurrence in young adults, usually males without alcoholic history; chronicity; enlargement of the liver (may be marked); progressive weakness and malaise; attacks of pain in the region of the liver with fever and increase of jaundice; enlarged spleen; absence of ascites.

Acute Infectious Jaundice (*Weil's Disease*).—*Characteristics*.—Jaundice is present which lasts for about two weeks.

Chief Signs.—Epidemicity; fever; severe muscular pains; enlarged liver and spleen; bile in the urine.

Acholic Family Jaundice (*Congenital Family Cholemia; Hemolytic Ictero-Anemia*).—*Characteristics*.—The jaundice is not intense except during the "acholuric crises."

Chief Signs.—Usual history of occurrence in several generations, occasionally acquired; enlarged spleen; presence of bile in the serum but usual absence in the urine; attacks of "acholuric crises" (malaise, depression, increasing jaundice, deeply pigmented stools and urine); fragility of the red corpuscles (with sodium chlorid 0.7 per cent instead of normally 0.4 per cent); secondary anemia.

Lobar Pneumonia.—*Characteristics*.—Jaundice occurs occasionally, its presence varying much in frequency in different epidemics. It is noticed soon after the initial rigor, but is rarely intense. It is most frequently associated with right basal pneumonia.

Chief Signs.—See page 412.

Malaria.—*Characteristics*.—Slight jaundice may occur in long continued tertian and estivo-autumnal infections. It may occur also as a result of malarial cirrhosis.

Chief Signs.—See page 525.

Septicopyemia.—*Characteristics*.—Jaundice is frequently a late symptom and may or may not be associated with the presence of multiple abscesses in the liver. It is more liable to occur in cases of portal than arterial pyemia. Bile pigment is not present in the urine, though the urine may be discolored.

Chief Signs.—See page 673.

Suppurative Cholangitis.—*Characteristics*.—Jaundice is always present but is variable. In some cases it is very intense, in others it is slight.

Chief Signs.—History of gall-stone colic; rigors; nausea; great prostration; septic fever without a prolonged period of apyrexia; swelling and tenderness of the liver; enlarged gall-bladder; leukocytosis; progressive emaciation; blood culture; may be paroxysms of pain without deepening of the jaundice; usually fatal termination.

Phosphorus Poisoning.—*Characteristics.*—Jaundice, though by no means constant, is one of the most characteristic symptoms. It is slight at first, appearing on the second or third day in severe cases, but in mild ones not until the end of the first week or even later. The color gradually deepens.

Chief Signs.—History of ingestion; severe vomiting; pain and tenderness in the epigastrium; enlargement of the liver; hematemesis; garlicky odor of the vomitus; presence of phosphorus in the vomited material.

Less Common Causes.—Cirrhosis of the liver (icteroid tint); splenic anemia (icteroid tint); passive congestion of the liver from heart or lung disease (icteroid tint); acute congestion of the liver; chronic perihepatitis; acute non-suppurative hepatitis; chronic catarrhal cholangitis; chronic cholecystitis; acute infectious cholecystitis; stenosis of the bile-ducts; obstruction of the bile passages from tumors of the abdominal viscera, carcinomatous lymph glands, abdominal aneurysm; infectious cirrhosis of the liver; abscess of the liver; tuberculosis of the liver; echinococcus cyst of the liver; actinomycosis; pernicious anemia (icteroid or lemon tint); leukemia (from enlarged portal glands); typhoid fever; scarlet fever; typhus fever; splenic anemia; ankylostomiasis; intoxication from snake venom; eclampsia; chloroform-, toluylendiamin-, trinitrotoluene-, tetrachlorethane-, dinitrobenzol-, arsenic-, antimony-, potassium chlorate-, phenol-, picric acid-poisoning; mushroom poisoning; suppurative pyelophlebitis; Buhl's disease; dengue; morbus maculosus neonatorum; hemoglobinuria infantum; hemorrhage; relapsing fever; distoma hepaticum; foreign body in the intestine; hydatid cyst of the liver; round worms in the bile-ducts; carcinoma of the duodenum, right kidney, or omentum; duodenitis; Hodgkin's disease, lymphosarcoma, tuberculous adenitis (from enlarged portal glands); movable right kidney; pancreatitis; carcinoma of the stomach; suprarenal tumor; ovarian tumor; carcinoma of the colon; tumor of the uterus; icterus nervosa; obstruction of the bile-ducts from inspissated bile, or from cicatrization; icterus gravis of children.

JOINTS, PAIN IN MULTIPLE

(Arthralgia)

This caption applies to pain in several joints, either simultaneous or successive. For pain limited to one joint look under that region. At the present time various chronic arthritides are supposed to be due to foci of infection situated in various localities, notably the teeth, tonsils, gall-bladder, prostate, rectum, etc., and in all cases a careful search for such foci is usually made.

Acute Rheumatic Fever.—*Characteristics.*—The affected joints are painful to move, soon become swollen and hot, and present a reddish flush. At the onset one joint may be involved, often the knee. Later other joints in succession are affected, often corresponding joints. Perhaps no disease is more painful.

Chief Signs.—Acute onset, often preceded by sore-throat or tonsillitis; slight chilliness; profuse acid sweats; soft rapid pulse (100–120); abundant sudamina and miliary vesicles; successive involvement of joints (knee, ankle, shoulder, wrist, elbow, hip, hand, foot) with tendency to subside in one joint while increasing in another; tendency to cardiac involvement; leukocytosis; anemia.

Acute Arthritis Deformans (*Periarticular Type*).—*Characteristics*.—Pain is variable but often severe. It is increased temporarily by movements and is worse at night. Many joints are simultaneously affected, including especially those between the first and second phalanges.

Chief Signs.—Age twenty to forty years; female predominance; onset acute, polyarticular or in one joint extending to others; fusiform swelling of the joints with heat, tenderness, and slight redness; skin sodden; limitation of movement; no joint immune, but the order of frequency is the hands and feet, proximal interphalangeals and metacarpophalangeals, wrists, ankles, knees, temporomaxillary and cervical vertebræ; onset fever, 102°–103° F., subsiding to 100° F., and persisting at times for weeks; pulse disproportionately high; later joint deformities; x-ray.

Chronic Arthritis Deformans (*Osteo-arthritic Type*).—*Characteristics*.—Pain is variable and may be slight throughout, although sometimes it is severe, and is apt to be increased at night and in wet weather. Many joints are affected at one time.

Chief Signs.—Age at onset forty to sixty years; female predominance except for spondylar and monarticular types; history of injury, exposure, ill-health, or mouth infection (teeth); gradual development, progressive with exacerbations; joint swellings, nodular in shape, nearly confined to the joint; polyarticular distribution either from the onset or as an extension, but may be monarticular; deformity of joints from growths and tendon contractions; limitation of movement and locking of the joints; x-ray.

Infective Arthritis (*Multiple Secondary Arthritis*).—*Characteristics*.—Pain in several joints may occur during the course of some infectious disease, especially scarlet fever, cerebrospinal fever, typhoid fever, dysentery, Malta fever, and rarely influenza, glanders, smallpox, measles and diphtheria. This multiple arthritis is usually not severe, is rarely suppurative, and soon subsides. It is somewhat similar clinically to rheumatic fever except that the involvement of the joints is simultaneous and not successive and the symptoms are milder in every respect.

Chief Signs.—Presence of the primary infectious disease.

Gonorrheal Arthritis.—*Characteristics*.—When acute the affected joints are usually very painful and the sheaths of the tendons in the neighborhood are often inflamed and tender, as is also the fascia (especially the plantar). While gonorrheal arthritis is frequently monarticular it may also be multiple and involve several joints simultaneously, and in addition to the larger joints also attacks the sternoclavicular and temporomaxillary, intervertebral, sacro-iliac and even those of the wrists, hands, and fingers.

Chief Signs.—History or presence of gonorrhea; slight fever; periarticular thickening; involvement of unusual joints; obstinate course, other joints being affected as one clears; uselessness of salicylates; complement-fixation test.

Suppurative Arthritis (*Septic Arthritis*).—*Characteristics*.—There is great pain and tenderness. Several joints may be affected in septic arthritis but more commonly only one.

Chief Signs.—History or presence of neighboring infection or focus of infection, as in the teeth, prostate, skin, sinuses, nose, ears, etc.; heat, swelling, and fluctuation; edema and brawny redness; enlargement of the bone ends; suppuration and

infiltration; hectic fever, leukocytosis, and sweats; later ankylosis; aspiration; x-ray.

Purpura Rheumatica (*Peliosis Rheumatica*; *Schönlein's Disease*).—*Characteristics*.—Articular pains involving several joints and associated with purpura and urticaria is the characteristic picture in this disease.

Chief Signs.—Occurrence commonly in males between twenty and thirty; onset with sore throat, fever from 101° to 103° F.; rash (purpuric and urticarial), first on the legs, about the affected joints; tendency to relapse.

Purpura Simplex.—*Characteristics*.—There may or may not be articular pains.

Chief Signs.—Occurrence commonly in children; crops of purpuric spots upon the legs, less commonly the trunks and arms; may be diarrhea; anorexia; short duration (a week or ten days).

Henoch's Purpura.—*Characteristics*.—Early in the course of the disease there may be pain and swelling in some of the large joints. The combination of purpura with colic constitutes the characteristic syndrome of this affection.

Chief Signs.—Occurrence in children between infancy and fifteen years of age; may be a little elevation of temperature; attacks of abdominal pain with perhaps vomiting and diarrhea; may be hemorrhages—melena, hematuria, hematemesis.

Less Common Causes.—Infantile arthritis deformans (Still's disease); spondylitis deformans; pneumococcus arthritis (usually but not always one joint, the knee; rare in adults); meningococcic meningitis; dysentery; influenza; glanders; variola; rickets (pain and tenderness of epiphysis rare); acute gout (usually one joint in the great toe); chronic gout (subsequently simultaneously several joints may be involved; pain not great; tophi); caisson disease; pyemia; hemophilia (pain on movement and tenderness); multiple neurofibromatosis; infantile paralysis; myxedema; scurvy (tenderness and swelling near joints); malignant disease of the joints; hydatid disease of the joints; neurosis ("hysterical" joint); acute myelitis; lead poisoning; purpura hæmorrhagica.

MENTALITY, CHANGES OF

(See also "Dementia," page 696; "Delirium," page 694; "Emotions, Alterations of," page 718; and "Development, Retarded," page 698.)

Neuroses; Psychoneuroses.—*Characteristics*.—The mental characteristic which is fundamental in so-called "neurasthenia" is fatigability. With this fatigability there goes a condition of irritability—irritable weakness—and inability to concentrate the attention for any length of time. This attention disorder is often responsible for what appear to be amnesias. The mood is pessimistic, often hypochondriacal. "Neurasthenia" is often classified in accordance with the organs about which the symptoms most prominently group themselves, into cerebral, spinal, genital, gastric, angiopathic. Symptoms of "hysteria" are not infrequently combined with those of "neurasthenia," constituting "hysteroneurasthenia."

"Hysteria," often called "conversion hysteria," is generally admitted to be mental or psychogenic in origin. The mental symptoms of "hysteria" are divided into the phenomena of the interparoxysmal period, the so-called mental stigmata, and those more or less connected with the paroxysm, the episodic phenomena. The

principal symptoms of the interparoxysmal period are: Anesthesias—disseminated, segmental, etc.; hyperesthesias, usually disseminated; motor disturbances—contractures, catalepsy, paralyses; amnesias; loss of will-power, and suggestibility. The episodic phenomena are principally: states of exaltation, depression, delusion, lethargy, somnambulism, fixed ideas, delirium, choreiform movements. Conditions of delirium and confusion with clouding of consciousness and hallucinations are common. Dream states and amnesia are also quite characteristic, as they are of epilepsy and alcoholism. The crises of "hysteria" are said to be associated with certain unconscious ideas that are connected with some previous experience, having a large content of painful emotion, which has been forgotten. In fact, the psychology of "hysteria" is the psychology of these unconscious states, and their method of growth by a process of dissociation, or splitting of the normal consciousness. This condition of dissociation may have its origin in a severe emotional shock, or be the reaction of a badly knit personality to the ordinary demands of reality. It occurs more particularly in young people, being more readily brought about in that condition of lability incident to development, and, as at this time the sexual preëmits a very prominent place in mental life, the resulting picture is correspondingly colored. "Hysterical" delirium, stupor, and dream states especially, may be and usually are, only transitory disturbances, but they may be of considerable duration, and in any case, while they last, are veritable psychoses.

Under the term "psychasthenia" are usually included such mental states as are expressed by the terms obsessions, impulsions, insanity of doubt, tics, agitations, phobias, delirium of contact, anguishes, bizarre feelings of strangeness and of depersonalization, etc. This psychoneurosis is said to have as its fundamental symptom, lowering of the psychological tension, which results in feelings of incompleteness and deficiency in the function of the real. The psychasthenic symptoms are based upon this inadequate perception of reality. The lack of efficient perception makes the world of reality seem strange, unknowable, and therefore mysterious and fearful. "Psychasthenia" stands midway between epilepsy and "hysteria." The obsessions of the "psychasthenic" include the various phobias and morbid desires too numerous to mention. The peculiarity of all "psychasthenic" symptoms is that they occur with clear consciousness, the patient fully recognizing their abnormal nature. The new psychoanalytic movement has tended to dismember "psychasthenia," splitting it up mainly into "hysteria," "anxiety hysteria," and "compulsion neurosis."

In the so-called "compulsion neurosis," the affect, instead of being converted into physical symptoms, as in "hysteria," is changed over by a mechanism of displacement to some indifferent idea (phobia or obsession). The disagreeable idea remains suppressed but the patient cannot understand the insistence and emotional coloring of the idea to which the affect has been transferred. The symptoms of the "anxiety neurosis" are, in the main, a general irritability, anxious expectation, vertigo, phobias, and paresthesias. The anxiety, aside from being more or less constant in the form of anxious expectation or apprehension, comes in attacks which are of various forms, the principal ones of which are cardiac or respiratory disturbances, perspiration, trembling, shaking, congestions, and paresthesias. Some psychoanalysts attribute the origin of "anxiety hysteria," and "compulsion neurosis," together with "neurasthenia," "hypochondria," and "anxiety neurosis,"

not to the psychic sphere but to a lack of harmonious adjustment of the physiological functions of the sexual organs, the failure of physiological adjustment manifesting itself in the psychic sphere as anxiety.

Under a newer classification the old terminology of "neurasthenia," "hysteria" and "psychasthenia" are absorbed by the more inclusive terms of neurosis and psychoneurosis, being but different phases or manifestations of the latter.

Chief Signs.—Exclusion of organic disease.

Chronic Alcoholism.—*Characteristics.*—The mentality undergoes a weakening which usually affects the highest attributes of the mind. The powers of discrimination become impaired. A quarrelsome, jealous disposition may result, the capacity for mental work becomes greatly reduced, and the will-power gradually more and more weakened or destroyed.

Chief Signs.—See page 685.

Paranoia.—*Characteristics.*—The general concept of paranoia is that of a psychosis presenting delusions of persecution of a pretty clearly defined type, well supported and defended by the patient, in other words, systematized. These delusions generally involve a more or less circumscribed portion of the mentality, although they tend to spread out slowly and involve more and more. With this state of mind there is no marked tendency toward deterioration, the disease having essentially a chronic course and remaining unchanged for years. Associated with the delusions and harmonized with them in content are frequently auditory hallucinations—voices.

General Paresis (*General Paralysis of the Insane; Dementia Paralytica*).—*Characteristics.*—The mental changes consist of loss of memory for recent events, inability to concentrate attention, impairment of the finer mental faculties, delusions, and a tendency toward progressive dementia. This dementia may commence with exaltation, alterations of character, irritability or depression, and its tendency is progressive until profound deterioration results and the patient pays no attention to his surroundings nor to the care of his person. An inability to fix the attention is a remarkable feature of most of these cases during examination.

Chief Signs.—See page 100.

Dementia Præcox or Schizophrenia (*Heboidophrenic, Hebeephrenic, Paranoid and Catatonic Forms*).—*Characteristics.*—This psychosis is one essentially of the period of puberty and adolescence, characterized by a mental deterioration tending to progress, though frequently interrupted by remissions. The characteristic mental substrate of dementia præcox is a "splitting of the psyche." It is this fundamental disturbance that gives rise to failure of voluntary attention and lack of interest which these patients show often, in themselves and their surroundings. They are well oriented, however, and show no evidences of clouding of consciousness. In the same way also arises the so-called emotional deterioration which they exhibit. Ideas, or content of thought, show a shallowness indicating an intellectual enfeeblement; fantastic, unusual, and bizarre delusions, the dilapidated groundwork on which they are founded. This dilapidation of thought becomes more and more manifest as deterioration progresses. Thought incoherence reaches an extreme degree in some cases until conversation may become a mere "word salad." Memory is usually defective, especially for recent events. There may be stereotypies, speech perservations and neologisms. In heboidophrenia the patient

begins by showing a lack of interest in things, ceases going out, and associates less and less with others. Later there may be transitory delusions, peculiarities of conduct, strange habits, mannerisms. In the hebephrenic form, hallucinations and delusions occupy a more prominent place. They are fleeting and silly. There is looseness of the train of thought, loose connection, and poverty of ideas. The characteristic feature of catatonia is stupor with muscular tension and negativism. There may be also excitement, verbigeration, stereotypy, impulsive acts, and mannerisms. Physical symptoms are more prominent in catatonia than in other forms of dementia præcox. The fundamental characteristic of the paranoid type is that the case presents delusions of persecution or grandeur, somewhat systematized with perhaps hallucinations of hearing.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics*.—Mental symptoms may be associated with failure of compensation. With precordial distress a mental state of anxiousness may arise. Transitory confusions with dreamy hallucinations occur with compensation disturbances and edema.

Chief Signs.—See page 642.

Korsakoff's Psychosis.—*Characteristics*.—The patient is a chronic alcoholic and may enter a hospital with delirium tremens. The delirium, instead of clearing completely, as is usual, merges into the so-called Korsakoff's psychosis, which has often been called chronic alcoholic delirium in contradistinction to delirium tremens or acute alcoholic delirium. The mental symptoms are the result of a characteristic combination of attention and memory disorder, the result being a peculiar type of amnesia. There is a defect in the recording of present events resulting in an anterograde amnesia. In more severe cases the amnesia may reach back—retrograde amnesia—but the events of early life are well remembered. The patient may be disoriented as to time and place. The characteristic symptom associated with the amnesia consists of a peculiar falsification of memory. The gaps in memory are filled by all sorts of fabrications which are narrated in great detail. These pseudoreminiscences are usually unstable and fleeting or at least seldom told twice alike. Sometimes they are fixed, however. The time sense is particularly affected.

Chief Signs.—History of over-indulgence in alcohol with perhaps an attack of delirium tremens; presence of polyneuritis with wrist-drop and foot-drop; may be aphasia, apraxia, reading and writing disturbances; homonymous hemianopsia; may be delirium, vertigo, headache, somnolence, ocular palsies, optic neuritis (acute hemorrhagic midbrain polioencephalitis); may be unequal pupils, with sluggish reactions, sometimes even the Argyll-Robertson pupil, and more rarely ocular palsies.

Opium Psychosis.—*Characteristics*.—In chronic cases there is a gradual mental degradation. The memory and power of attention are impaired and capacity for initiation lost. There is impaired ethical feeling where obtaining the drug is concerned. There may be an hallucinated state of paranoid coloring or distinctly deliroid.

Chief Signs.—History of taking the drug (often difficult to obtain); periods of torpor and languor with small pin-point pupils; yellowish-brown, cachectic complexion; hypodermic scars; isolation and absolute withdrawal test.

Cocain Psychosis.—*Characteristics*.—The patients are active and extremely

talkative, often repeating remarks a number of times. They are constantly busy, some of them writing endless letters, their appearance indicating an acute intoxication. The effects are fleeting, however. There is incapacity for mental application, lessened moral sense, mendacity, irritability, impaired judgment, and sometimes delusions of marital infelicity. These symptoms may be followed by mental confusion, hallucinations, but more characteristically by a paranoid state, with a great variety of delusions.

Chief Signs.—History of ingestion of the drug (often difficult to obtain); increased pulse; dilated pupils; emaciation; sensation of crawling under the skin (“cocain bug”); abstinence test (not so severe as with opium).

Senile Dementia (*Senile Psychosis; Involution Psychosis*).—*Characteristics.*—A certain degree of involution, regression, failure of both mental and physical powers is normal to man if he lives beyond the period of his maximal vigor. The amount of deterioration, however, is not always commensurate with years and varies vastly in different individuals. When senile involution begins earlier than the sixtieth year it is spoken of as senium præcox. The more usual symptoms of senile involution occurring after sixty are, in the main, loss of memory for recent events due to lack of impressibility. Misoneism or intolerance of change is marked, which develops a marked tendency to reminiscence. If upon this background of deterioration active psychotic symptoms develop they are usually shown in delusions of a persecutory type and hallucinations. There is often restlessness and confusion at night.

Chief Signs.—See page 698.

Infection-Exhaustion Psychosis (*Collapse Delirium and Acute Hallucinatory Confusion*).—*Characteristics.*—Infection and exhaustion psychoses have closely similar pictures and are often associated clinically. Confusion and delirium are characteristic mental symptoms. It has been said that fever and infection are in some respects measures of the mental stability of an individual. The term “infection delirium” includes mental disturbances which develop early in infectious diseases. Febrile delirium indicates confusion or delirium accompanying the febrile movement. The true exhaustion psychosis develops after severe exhaustion from any cause. In the form known as “collapse delirium” there is confusion, which may be mild (perplexity), or more usually, hallucinations, clouding of consciousness, disorientation, and dreamy delusions. The patient is excited and may be violent, and in severe cases incoherence becomes absolute, disorientation complete, clouding of consciousness profound. The acute hallucinatory psychosis is less acute than the above, but of the same general mental character with clouding of consciousness, confusion, multiform fleeting hallucinations, and the course may be of considerable duration, often many months.

Chief Signs.—See page 696.

Delirium Tremens (*Acute Alcoholic Psychosis*).—*Characteristics.*—In delirium tremens, as the name implies, there are tremor and delirium. The tremor involves particularly the small muscles of the hands, face and tongue, but may be general. The delirium is an acute hallucinatory confusion. Disorientation is often complete. The predominating hallucinations are visual, and characteristically take on the form of animals of loathsome and horrible description. The patient is in constant motion, picking insects from his person and repelling abhorrent animals. There

may be constant talking and shrieking. Terror, however, is not always present, and dreamy delusions relating to occupation (occupation delirium) may dominate the picture.

Chief Signs.—See page 695.

Cerebral Tumor.—*Characteristics.*—Mental symptoms are more likely to occur if the tumor is prefrontal. There are noticed changes of character, irritability, childishness, emotional instability, with a tendency to hebetude and some clouding of consciousness. Hallucinations may develop. There may be, particularly in frontal lobe tumors, a jovial, happy frame of mind and a tendency to joke and make fun (*Witselsucht*).

Chief Signs.—See page 750.

Cerebral Syphilis.—*Characteristics.*—An acute delirium may develop during the early secondary manifestations of the disease. Later, as a result of thrombotic changes, symptoms of dementia may arise. A great many different mental pictures may be encountered, chief of which are: (1) simple luetic weakness of the mind; (2) syphilitic pseudoparalysis; (3) paranoid forms combined with tabes; (4) paranoid forms without tabes; (5) epileptiform episodes; (6) short hallucinatory confused states; (7) psychotic disturbances associated with syphilitic cardiac disease; (8) psychoses resembling manic-depressive psychosis; (9) mental disorder due to syphilis as a psychic trauma; (10) various grades of weak-mindedness, psychopathic constitution, etc.

Chief Signs.—See page 695.

Apoplexy (*Cerebral Hemorrhage*).—*Characteristics.*—The mental condition following apoplexy is usually one of impairment, which if the lesion is extensive progresses to dementia. If there is aphasia, the dementia is more rapid and complete. There may be epilepsy. Exaggerated emotivity is often present.

Chief Signs.—See page 675.

Traumatism.—*Characteristics.*—The most frequent mental changes following trauma are of a “hysteric” or “neurasthenic” character. True psychoses and even paresis seem to be lighted up in some cases. Following an injury there may be delirium. Then there are certain very slowly progressive dementias which show themselves in a general inefficiency in the patient’s life.

Encephalitis Lethargica (*Epidemic Encephalitis*).—*Characteristics.*—At the onset of the illness the mental symptoms are frequently irritative, and delirium with hallucinations and delusions is often noted. This is more apt to occur at night and may be present, when in the daytime the mental state is that of stupor with normal rationality. The onset of drowsiness is usually some days after the first symptoms have appeared. At first it is simply a drowsiness with a constant desire to sleep. In a few days there is more pronounced somnolence and lethargy. The patient may, as a rule, be aroused easily when apparently in deep stupor and when aroused show a normal intellectuality, being well oriented, having a good memory, and often showing a surprising keenness of perception and realization of what is taking place about him. Some of the patients show a marked jocularly, turning everything to joke or witticism. Frequently there is a striking absence of appreciation of the seriousness of their condition, and an entire lack of anxiety or fear. There are, however, cases in which epileptic, maniacal, and acute psychotic

manifestations occur. Delusions, hallucinations, and delirium may appear, at times even convulsions. This type is uncommon.

Chief Signs.—See page 707.

Epilepsy.—*Characteristics.*—The mental conditions found in epilepsy are grouped as: (1) The epileptic character and temperament; (2) the paroxysmal psychoses which precede or succeed the convulsive phenomena; (3) the psychoses which replace the convulsions, or psychic epileptic equivalents; and (4) the permanent interparoxysmal epileptic state.

(1) In epilepsy it is unusual not to find some form of mental obliquity. The memory is usually impaired for recent events and is often of a perverted kind. Epileptics are self-opinionated and egotistical, and their conversation is prolix and pretentious. Mental perspective is blurred, judgment is feeble, they are credulous, mystical, and given to superstitious ideas and fancies. Many possess a religious fervor contrasting with their actions, their ideas of right and wrong being often vague. Their want of initiative is striking. They are moody, of hasty temper, pugnacious, lazy and lethargic, and difficult to live and work with. Many are habitually irritable and awkward, while others are actually imbecile, demented, delusional, and liable to dangerous impulses.

(2) Different forms of actual mental aberrations or perversion are incidental to the seizures either before or after an attack. They include hallucinatory, delusional, maniacal, melancholic, and “psychasthenic” states.

(3) Psychical phenomena can replace convulsive seizures in some cases of epilepsy. Psychic epilepsy consists in the performance of simple automatic actions. Epileptic mania and epileptic impulsion may occur, also transitory delusional states and catatonic stupor.

Chief Signs.—See page 684.

Presenile Psychosis.—*Characteristics.*—This period is especially noteworthy because of the great prominence of depressions. Involution melancholia is the commonest type. The term melancholia is at present limited to the depressions of later life that cannot be satisfactorily classed with any of the other psychoses, as, for instance, manic-depressive psychosis. Melancholia is essentially a disease of the period of involution—forty to fifty in women, rarely before fifty in men. A considerable number, but by no means all, show the beginning aspects of senile decay—gray hair, arteriosclerosis. The menopause seems to be an important factor in women. The characteristic mental state is apprehensive depression; not infrequently there are delusions of having committed “the unpardonable sin.” There is great anxiety, sometimes agitation. In exaggerated cases there is confusion.

Arteriosclerotic Psychosis.—*Characteristics.*—This condition is associated with a progressive failure of the mental faculties due to areas of softening in the brain. Because of the diffuseness of the lesions the picture often resembles paresis, but the patient is much further advanced in years than is usual in that disease. Some of the cases develop only nervous symptoms, irritability, forgetfulness, hypochondriacal ideas or paranoidlike states, but remain for a long time practically stationary. Others are progressive, with epileptiform seizures, the development of focal symptoms, and advancing dementia that becomes profound.

Uremia.—*Characteristics.*—The auto-intoxication which develops as a result of

renal disease produces symptoms of an acute confusion with changeable delusions, hallucinations, clouding of consciousness, restlessness, and often an occupation delirium. The delusions may be grandiose, or depressive. In subacute cases a condition of suspicion, anxiety, with loosely systematized delusions of persecution, sometimes develop.

Chief Signs.—See page 684.

Diabetes Mellitus.—*Characteristics.*—The mental disorder associated with diabetes is usually depression with melancholic ideas of sin and ruin and usually hypochondriacal ideas, especially with reference to excretion of sugar. Persecutory delusions are quite frequently developed.

Chief Signs.—See page 676.

Myxedema.—*Characteristics.*—The mental state associated with myxedema is one of stupidity, indifference, and apathy, deepening into dementia. There is gradual failure of memory, lack of power of attention, slow association of ideas and difficulty of apprehension. Occasionally a mild confusion with excitement develops.

Chief Signs.—See page 697.

Cretinism.—*Characteristics.*—Lack of mental development may range from mild grades of imbecility to profound degradation.

Chief Signs.—See page 41.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics.*—The prevailing mental tone is fear and apprehension. There may be hallucinations of hearing and vision. Voices may be heard saying disagreeable things. With these hallucinations occur anxious and agitated states. Severe cases of acute thyroidism with active delirium are occasionally seen following operations upon the gland.

Chief Signs.—See page 288.

Less Common Causes.—Alcoholic pseudoparesis; alcoholic hallucinosis; alcoholic pseudoparanoia; involution paranoia; involution paraphrenia; presenile paraphrenia; paranoid psychosis of advanced years; gastro-intestinal psychosis (confusion followed by acute delirium); Sydenham's chorea (unstable); Huntington's chorea (mental deterioration); paralysis agitans (mild enfeeblement); multiple sclerosis (slight impairment with emotional instability; the patient laughs and cries very easily); pellagra (delirium, simple retardation); influenza; progressive lenticular degeneration; congenital cerebral diplegia (mental deficiency).

MOVEMENTS, ATHETOID

(*Athetosis; Mobile Spasm*)

Athetosis occurs most commonly in the spastic limbs of old hemiplegics, and chiefly after infantile hemiplegia. It never occurs in a completely paralyzed limb. The movements are usually confined to the upper limb and consist of very slow, irregular, twisting movements, most marked in the fingers and wrist, but in severe cases affecting the forearm, elbow, shoulder and even the lower limb, where the most common involuntary movement is a hyperextension of the great toe. In bilateral athetosis (rare and generally following diplegia), the face may be involved in hideous grimaces. In a typical case the hand movements consist of

slow flexion, hyperextension, spreading of the fingers, abduction of the thumb, flexion, extension, pronation, and supination of the forearm.

Posthemiplegic Athetosis.—*Characteristics.*—Athetosis in the affected limbs develops late and may not supervene for several years after the onset of the paralysis. It is uncommon as a sequel of hemiplegia in adults, but is common in congenital and acquired infantile hemiplegia.

Chief Signs.—History of stroke; spastic weakness on one side. For causes of Hemiplegia, see page 314.

Congenital Diplegia (*Little's Disease*).—*Characteristics.*—Athetosis develops late in the affected limbs.

Chief Signs.—Insidious and early onset; spastic paraplegia (legs only, or legs and arms); clumsy, stiff gait (may be "cross-legged" or "scissors"); defective speech; mental deficiency; optic atrophy; may be simple tremor or intention tremor.

Acquired Infantile Paraplegia (*Following Encephalitis, Polio-Encephalitis, Cerebral Embolism or Thrombosis, Meningeal Hemorrhage*).—*Characteristics.*—Athetosis in the affected members develops late, sometimes years after the original cerebral catastrophe.

Chief Signs.—See page 626.

Less Common Causes.—Primary athetosis (bilateral); disseminated sclerosis; encephalitis lethargica; hysteria; torsion or progressive tension spasm; pseudo-athetosis of tabes (in fingers and wrist when hands are raised).

MOVEMENTS, CHOREIFORM

These movements are irregular, jerking, wriggling, and grimacing. They may affect the face, soft palate, tongue, trunk, limbs, and even the muscles of respiration. When mild they amount to no more than excessive fidgeting, but when severe the patient has no rest and may be tossed violently about.

Chorea (*Sydenham's Chorea; St. Vitus' Dance*).—*Characteristics.*—There are irregular, involuntary, purposeless, spasmodic movements. They usually cease during sleep. The order of frequency in the distribution of the movements is (1) hands and face, (2) legs, (3) general, (4) one side (hemichorea). The movements develop rapidly at the onset. Movements of breathing, chewing, swallowing, and speaking may be involved. The movements occur spontaneously but are increased by emotion or by voluntary movements.

Chief Signs.—Occurrence in childhood between five and fifteen years; preponderance of females (20 per cent); history of acute rheumatic arthritis; frequent association with endo- and pericarditis and tonsillitis; may be fever; hypotonia of affected muscles; dulness and irritability; duration rarely over two months; relapses and recurrences common.

Chronic Progressive Chorea (*Huntington's Chorea*).—*Characteristics.*—The movements are similar to those of ordinary chorea but slower, and incoördination is marked. The movements commence in the hands and face. In the early stage they are controllable by will, and voluntary movement is possible, but later they become severe and universal. There is much facial contortion, speech is difficult, and gait lurching, owing to muscular spasm.

Chief Signs.—Onset in middle life; hereditary and familial taint; attacks of depression or excitement, with progressive mental weakness and dementia.

Less Common Causes.—Hyosein chorea; senile chorea (probably a form of Huntington's chorea); congenital chorea; hemiplegia (before or after the stroke, involving the affected side); "hysteria"; pandemic chorea; infantile spastic paraplegia; Dubini's chorea (in Italy).

MOVEMENTS, FIBRILLARY

(*Myokymia*; "Live Flesh")

This movement consists of a transient flickering or quivering of a muscle, affecting a few muscle bundles of a single muscle without producing movement of a joint. It is not uncommon in anemic persons or those in a general state of poor health. It is especially seen in the orbicularis oculi, deltoid, biceps, glutei and quadriceps, is unaffected by rest, and is usually of no significance. It may occur, however, in organic disease. Fibrillary contractions do not occur in the myopathies or dystrophies due to lesions in the muscles but only in the wasting muscles of neuropathic origin, whose centers of innervation in the anterior horn are degenerating. The fibrillation is brought out strikingly after a few minutes of deep breathing.

Progressive Muscular Atrophy (*Chronic Anterior Poliomyelitis*).—*Characteristics.*—The myokymia appears in the wasting muscles and can often be elicited by gentle flicking or by a breath of cold air blown over the skin. The tremor may give rise to a sensation of "fluttering under the skin."

Chief Signs.—See page 319.

Amyotrophic Lateral Sclerosis.—*Characteristics.*—As above.

Chief Signs.—See page 319.

Syringomyelia.—*Characteristics.*—Fibrillation is noted in the wasting muscles as in progressive muscular atrophy.

Chief Signs.—See page 317.

Bulbar Paralysis.—*Characteristics.*—Fibrillary contractions are seen in chronic cases and best shown in the tongue, which looks "like a bag half full of worms."

Chief Signs.—See page 799.

Intermittent Claudication.—*Characteristics.*—Slow, wormlike contractions of individual muscle bundles, without movement of the foot, may sometimes be seen in the calf muscles.

Chief Signs.—Occurrence in men over forty, particularly tobacco users, syphilitics, or hard workers; pain, which may be intolerable, in one or both legs, generally the calf, coming on after walking and disappearing with rest; may be absent pulsation in the foot arteries and in the popliteal.

Less Common Causes.—*Tabes dorsalis*; sciatic neuritis.

MOVEMENTS, MYOCLONIC

This movement is characterized by paroxysms of shocklike contractions in various muscles, lasting for several minutes at a time, irregular in rhythm and

varying in rapidity from ten to fifty per minute. In slight cases the twitches may be insufficient to produce movements in the affected parts. The limbs are usually affected, especially the lower, but the trunk or face may be involved.

Myoclonus may be induced by deep breathing for a few minutes (hyperpnea) in the muscles below a lesion within the vertebral canal which impinges on the posterior nerve roots or on the posterior or lateral portions of the spinal cord. The appearance of such a phenomenon points to the advisability of a surgical operation.

Encephalitis Lethargica.—*Characteristics.*—Myoclonus of the arms, legs, and abdomen sometimes occurs.

Chief Signs.—See page 707.

Paramyoclonus Multiplex.—*Characteristics.*—The movements are particularly sudden and violent, occurring bilaterally, or first on one side, then on the other. They are painless, but may give rise to much inconvenience by their violence. They are increased by emotion and cease during sleep. They may be single, but more often are clonic, repeated perhaps fifty or a hundred times per minute.

Chief Signs.—Familial or hereditary taint; chronicity; absence of mental, sensory, or sphincter changes.

Less Common Causes.—Nystagmus-myoclonus (of Lenoble); myoclonus epilepticus (of Unverricht); “hysteria”; myoclonic epilepsy; petit mal (spasmodic twitches of the muscles of a limb, or of the face); epidemic hiccup.

MOVEMENTS, TREMULOUS

(Tremor)

Tremors are coarse or fine. A coarse tremor is one in which the excursion is large, jerky, comparatively slow (*e.g.*, five per second), and more evident to the eye. Fine tremors are just the reverse (ten to twenty per second). A coarse tremor means organic disease, a fine tremor functional or toxic disease. There are, however, exceptions to this rule, as the tremor of mercurial poisoning is coarse, and the tremor of general paresis and “hysteria” may be coarse or fine. Furthermore, coarse tremors may develop as temporary exaggerations or later developments of the fine tremors; when the body is thoroughly chilled or fatigued, or when the patient is in a rigor, the initial fine tremor will often pass on into a very coarse tremor, though the rhythm remains about the same. Transitory or accidental tremors also occur, due to fear or other emotional stress, the onset of fevers (chill), or exposure to cold. Asthenia following prolonged illness in acute and wasting diseases is often accompanied by a rapid, fine, regular tremor, which may involve the entire body but usually only the hands and wrists; the cause is obvious. Habitual excessive use of tea, coffee, and tobacco (really drug poisoning) often causes a fine tremor of the hands, especially of the fingers and small muscles of the hands. Apart from all the other tremors mentioned in this article there still exist isolated instances in which tremor is the only symptom, which may be coarse or fine and is usually of the hands (simple tremor); this is permanent, neither advancing nor getting better.

Paralysis Agitans (*Parkinson's Disease; Shaking Palsy*).—*Characteristics.*—The tremor is very coarse and rhythmical (about six per second), beginning in the fingers and small muscles of one hand, gradually extending up the arm, skipping

the trunk, and soon involving the leg and foot. Much later the other side is affected. The tremor in the hand is of the "pill-rolling" type. Other movements are flexion and extension at the metacarpophalangeal joints or at the wrist, or pronation and supination movements of the forearm, or all these movements may be combined at one time. There may be marked shaking of the whole arm. In the lower limb the tremor may be flexion and extension at the ankle-joint. To-and-fro movements of the head are sometimes seen. Tremor may also implicate the lips and tongue. The tremor is most pronounced during repose and reduced by voluntary movements and will-power. It ceases during sleep and is increased by emotion or excitement. The tremor is one of the cardinal signs of the disease.

Chief Signs.—See page 41.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics.*—Tremor is one of the cardinal symptoms. It is distributed to the hands and arms, rarely involves other parts, and never involves the muscles of the face, lips, or trunk. It is fine (eight to ten per second) and constant. Rest tends to diminish it, but exhilaration and excitement greatly aggravate it. It becomes more pronounced as the disease advances or during a crisis.

Chief Signs.—See page 288.

General Paresis (*General Paralysis of the Insane*).—*Characteristics.*—A characteristic tremor is the most constant early symptom of interference with the motor functions. It is seen first in the circum-oral facial muscles, lips, and tongue, and may be observed at rest; but it is accentuated by emotion, attempts to speak, and on protrusion of the tongue. It consists of irregular, inconstant, more or less rapid quivering movements, rarely confined to one muscle, but playing over groups of muscles. The same kind of tremor is seen in the outstretched hands and arms, and some degree of incoördination of movement is frequently combined with it.

Chief Signs.—See page 100.

Senility.—*Characteristics.*—In the early stage the tremor is limited to the head, but may advance, and involve the entire body. It is slow, fine, and regular, is not affected by rest, but is aggravated by voluntary movement and excitement. The hand moves separately and not with the forearm.

Chief Signs.—Occurrence late in life; bilateral distribution; absence of rigidity; early involvement of the head.

Chronic Alcoholism.—*Characteristics.*—The tremor affects the lips, tongue, face, and hands and may involve the whole body in aggravated cases, or in delirium tremens. It is fine but slow, regular and constant, reduced by rest, but augmented by voluntary movement. It is most marked in the morning but temporarily relieved by food and drink.

Chief Signs.—See page 685.

Neurosis ("*Neurasthenic Tremor*").—*Characteristics.*—The tremor involves the face, especially the lips, eyelids, and surrounding muscles, less often the hands. It is fine and rapid, and is not increased by voluntary movement, but is by emotion.

Chief Signs.—See page 738.

Neurosis ("*Hysteric Tremor*").—*Characteristics.*—The distribution may be general but it is most apt to affect the fingers and hands, and particular groups rather than particular muscles. It may be of any type, fine, coarse, or intentional,

is diminished by rest, and is apt to disappear during sleep, but is aggravated by voluntary movement, excitement, fatigue, and emotion.

Chief Signs.—See page 738.

Occupation Neurosis.—*Characteristics.*—Some degree of tremor of the hands is an invariable accompaniment and is usually more marked in the affected limb.

Chief Signs.—See page 688.

Hemiplegia.—*Characteristics.*—Sometimes tremor on the affected side occurs as a secondary or late manifestation. It is slow, regular, and coarse, and resembles that of paralysis agitans, is diminished by rest but aggravated by voluntary movement and excitement.

For causes of Hemiplegia, see page 314.

Multiple Sclerosis (Disseminated Sclerosis).—*Characteristics.*—The “intention” or “action” tremor is one of the classical signs of the malady, almost invariably present in greater or less degree. It is static in character and may also be seen in the head and trunk as well as the limbs. It may be present under all circumstances except rest in bed. In its minor degrees it may be demonstrated by asking the patient to touch the point of his nose and in contradistinction to cerebellar ataxia the unsteadiness and movements are most marked when the object is achieved.

Chief Signs.—See page 626.

Cerebral Tumor (Tegmental lesions of the Pons or Crus).—*Characteristics.*—There may be a slow rhythmic tremor of the limbs of the opposite side, chiefly in the hand or foot. The tremor is increased by excitement or voluntary movement but ceases or diminishes during sleep.

Chief Signs.—Presence of general symptoms of brain tumor; localizing signs of a gross destructive lesion; may be ocular palsy; may be spastic hemiplegia; may be oculomotor paralysis of one side and tremor of the opposite arm and leg (Benedikt's syndrome).

Cerebral Tumor (Frontal Lobe).—*Characteristics.*—There may be a fine tremor in the upper limb when it is held horizontally forward. The tremor affects the ipsilateral limb. It is absent during muscular rest. It is fine and rapid.

Chief Signs.—Presence of general symptoms of brain tumor; early mental symptoms (dulness, failure of memory, childish jocularity, defective attention); may be Jacksonian fits; may be deviation of the eyes and head; may be motor aphasia; may be epileptiform convulsions; may be spastic hemiplegia; late onset of optic neuritis; may be reeling gait.

Cerebellar Tumor.—*Characteristics.*—A slow coarse tremor sometimes of the intention type, affecting the head and upper extremities, occurs in about 50 per cent of the cases.

Chief Signs.—See page 832.

Encephalitis Lethargica (Paralysis Agitans Type).—*Characteristics.*—There is tremor in the arm and leg, continuous during rest, fairly large in amplitude, and resembling in all respects that of paralysis agitans (see above).

Chief Signs.—See page 41.

Hereditary Tremor.—*Characteristics.*—The tremor usually affects the head and arm, especially the latter. It is rapid, fine, and regular, and is not affected either by rest, voluntary movement, or emotion.

Chief Signs.—Transmission through several generations; appearance at an early age (around twenty); absence of discoverable cause.

Progressive Lenticular Degeneration (*Wilson's Disease*).—*Characteristics.*—Tremor is one of the cardinal symptoms. At the onset it is fine, limited in range and regular (four to eight oscillations per second). It is increased by voluntary movement, physical or mental exertion, and inhibited voluntarily for a brief period. Later it becomes more extensive and may involve the entire body. Voluntary movements may cause it to simulate paralytic agitans or chorea.

Chief Signs.—See page 800.

Less Common Causes.—Chronic mercury poisoning; chronic lead poisoning; morphinism; cocaineism; chloral poisoning; congenital diplegia; absinthism; cerebral abscess; amyotrophic lateral sclerosis; hereditary cerebellar ataxia; tumor of the corpora quadrigemina; tumor of the optic thalamus; chronic infectious arthritis; "shell-shock."

NASAL VOICE

(See also "Speech, Disturbances of," page 795.)

Two varieties of nasal voice occur: The open nasal, caused by non-closure of the nasopharyngeal opening by the soft palate and imitated by speaking without opening the mouth; and the closed nasal, caused by nasal stenosis and imitated by speaking with the nostrils held shut.

Acute Rhinitis (*Coryza; Common "Cold"*).—*Characteristics.*—A symptom which becomes a serious inconvenience to public speakers and singers is alteration in the quality of the voice, which acquires a guttural, husky, and so-called "nasal tone" because of limitation of the resonance space by intranasal swelling. The type is the "closed nasal" variety.

Chief Signs.—May be initial chill; sneezing; nose congested for one to three days; watery discharge for two to seven days; mucopurulent discharge with gradual subsidence; pain in the nose and forehead; irritation of the skin about the nostrils.

Hypertrophy of the Tonsils and Adenoids (*Lymphoid Hypertrophy of the Pharyngeal Vault*).—*Characteristics.*—The voice tone, which may be thick and nasal ("closed nasal" variety), arises from the interference of the growths with the excursions of the sound-waves transmitted upward from the larynx. The "sounding-board" function of the larynx is impaired. "Spring," "ninety-nine," are pronounced "sprig," "nidy-nid."

Chief Signs.—Occurrence usually between four and ten years, though no age is exempt; mouth-breathing; snoring; may be deafness and offensive aural discharge; may be cough and occasionally spasmodic breathing; may be nosebleed, night terrors, nocturnal enuresis, aprosexia, night sweats; may be chest deformities, abnormal facial and palatal development; "adenoid facies" (lack of expression, pinched nose, open mouth, retracted upper lip, hanging lower jaw, pallor); rhinoscopy; palpation of the nasopharynx.

Cleft-Palate.—*Characteristics.*—There is nasal voice of the "open nasal" variety.

Chief Signs.—Presence of a cleft from birth; may be regurgitation of food through the nose.

Diphtheritic Paralysis of the Palate.—*Characteristics.*—The voice becomes nasal (“open nasal” variety), and the pronunciation of certain consonants becomes impossible. “B” becomes “m,” “d” becomes “n,” and “k” sounds like “ng.”

Chief Signs.—See page 799.

Nasal Polypus.—*Characteristics.*—If nasal obstruction is complete on both sides the voice has a nasal quality of the “closed nasal” type.

Chief Signs.—May be flapping valvelike action on respiratory efforts, appreciated by the patient, or even heard by the examiner; may be headaches; may be watery discharge from the nose with excoriation and redness of the nostrils; may be sinus complications and catarrhal deafness; aggravation of symptoms by damp, cold weather; rhinoscopy, showing a pink or dusky red swelling like pulp of grape traversed by red capillaries.

Ulceration with Perforation of the Soft Palate.—*Characteristics.*—The voice is of the “open nasal” variety when there is destruction or perforation of the soft palate by ulceration, usually syphilitic.

Chief Signs.—Presence on inspection of a perforation or irregular cleftlike loss of palatal substance; history and other evidences of syphilis; positive Wassermann.

Less Common Causes.—Bulbar paralysis; asthma; myasthenia gravis; acute pharyngitis; retropharyngeal abscess; pseudobulbar paralysis; peritonsillar abscess; deviated septum; typhus (prodromal); variola (prodromal); pharyngeal diphtheria (prodromal); scarlatina (prodromal); hypertrophic rhinitis.

OBESITY

Obesity is an excessive deposit of fat in the body due to disorder of metabolism. Primarily it results from inadequate oxidation of foodstuffs associated either with excessive absorption of materials which produce fat, or with incomplete combustion, or both. It is not always due to excessive intake. Heredity, race, and sex (female) play a part. Fat metabolism is closely connected with internal secretions. Too little exercise and over-intake of fluids may also play a part. Obesity predisposes to diabetes. Chronic parenchymatous nephritis sometimes gives rise to a type of obesity in which the individual is large, pale, fat and flabby. Part of the apparent fatness may be due to excess of fluid in the tissues, but there may be no obvious edema with pitting on pressure. Testicular atrophy or excision as a cause of undue fatness is best exemplified by eunuchs. Ovarian insufficiency may exert a certain degree of influence in the production of obesity, but it is difficult to prove this because many of the patients suffer from hypothyroidism at the same time; there is a close inter-relationship between the thyroid gland and ovaries. The principal pathological obesities are given below.

Myxedema (*Hypothyroidism*).—*Characteristics.*—A characteristic general, non-pitting swelling of the subcutaneous tissues is present, increasing the bulk and altering the appearance. The condition is marked when the tissues are lax, *e.g.*, “supraclavicular pads.” This is, however, not true obesity.

Chief Signs.—See page 697.

Dystrophia Adiposogenitalis (*Fröhlich's Syndrome; Hypopituitarism*).—*Characteristics.*—The fat is general, but especially of feminine distribution (hips, breasts, etc). The individual may be enormous.

Chief Signs.—Onset in childhood or adulthood. If in childhood: no sexual development (infantile organs; no hair on the face, pubes, or axilla; no menstruation or semen); delayed skeletal growth. If in adulthood: reversion of sexual organs to the infantile type; high carbohydrate tolerance, hypoglycemia, polyuria; may be headache, vomiting, somnolence, bitemporal hemianopsia, blindness, optic atrophy or neuritis.

Hypernephroma.—*Characteristics.*—Increased deposition of fat occurs in children. There are two groups: the larger one with moderate increase in fat, the smaller with greater obesity.

Chief Signs.—Presence of large, rapidly growing, mobile abdominal tumor; may be metastasis to the liver, lungs, bones, kidneys; general and sexual precocity; excessive hair; may be pigmentation; in the group with greater obesity other changes are slight, except growth of hair.

Adiposis Dolorosa (*Diffuse Lipomatosis; Dercum's Disease*).—*Characteristics.*—Extreme fatness develops, but not quite universally; the abdominal wall, especially on either side of the umbilicus, the neck, shoulders, arms, forearms, thighs and legs may become enormous; but the hands, feet, scalp, ears, nose, and forehead escape.

Chief Signs.—Occurrence in middle age, especially females; may be syphilis, alcoholism, traumatism; may be general tenderness (diffuse form); or only local painful areas or nodules (localized form); asthenia.

Less Common Causes.—Chlorosis; eunuchoidism; progressive lipodystrophy (buttocks, abdomen, genitals, principally); thymic infantilism; cerebellar tumor; pineal gland tumor.

OPISTHOTONOS

In this rare but characteristic condition the muscles of the neck, back, and legs are contracted rigidly in such a way that the body is overextended in the form of an arch, supported by the occiput above and by the heels below.

Tetanus (*"Lockjaw"*).—*Characteristics.*—Sooner or later, as the disease progresses, the signs of muscle spasm (stiff neck, locked jaws, rigid back) become generalized and a general rigidity results; there are severe paroxysmal exacerbations during which the position of opisthotonos is assumed, giving the classical picture of tetanus. The slightest irritation is enough to produce a spasm, which lasts for a variable period, and is associated with agonizing pain, the patient being held as in a vise, unable to utter a word.

Chief Signs.—History of a puncture wound (eight to twelve days previous); stiffness of the neck; locking of the jaws (trismus); retraction of the head; risus sardonicus; fever; tonic convulsions with rigidity between paroxysms (not over seven to ten days); culture from the wound and inoculation of mice.

Strychnin Poisoning.—*Characteristics.*—Paroxysms of opisthotonos are excited by stimuli, often very slight, but between these contractions there is complete muscular relaxation.

Chief Signs.—History of an overdose or taking of rat poison; jaw and neck not specially affected; risus sardonicus; temperature normal; quick death or rapid subsidence of the symptoms.

Cerebrospinal Meningitis (*Cerebrospinal Fever*).—*Characteristics.*—In severe

cases opisthotonos occurs, though more often there is a general rigidity (orthotonos) with retraction of the head. The child cannot lie upon the back, but rests upon the side, with arched spine and neck, and general flexion of the extremities; later in the disease the flexion of the extremities may be replaced by complete extension of the lower extremities with dropping of the feet and typical opisthotonos. The muscular spasm is tonic.

Chief Signs.—Acute onset; high fever; headache; delirium; vomiting; convulsions; Kernig's and Brudzinski's signs positive; lumbar puncture (cloudiness, pleocytosis, presence of meningococci).

Uremia.—*Characteristics.*—Epileptiform convulsions may occur in which there is opisthotonos. The patient is, however, usually unconscious or comatose. The fits may recur rapidly.

Chief Signs.—See page 684.

Neurosis ("Hysteria").—*Characteristics.*—An epileptoid condition may occur, which closely simulates a true epileptic attack with tonic spasm, during which opisthotonos may appear, giving an appearance of tetanus or strychnin poisoning. There may even be persistent lockjaw or grinding of the teeth. The tonic convulsion is, however, followed by clonic convulsions, gradual relaxation, and stupor. These attacks also are apt to be of different degrees of intensity and to be accompanied by writhing and change of attitude and position. The mental attitude is in one way or another abnormal for the time being.

Chief Signs.—See page 738.

Infantile Cerebral Hemiplegia.—*Characteristics.*—In the most severe cases that survive the first few days of life there is often spasm of the muscles of the neck and trunk giving rise to opisthotonos.

Chief Signs.—See page 316.

Less Common Causes.—Internal spinal meningitis; cerebellar tumor (middle lobe); tetany; malingering.

ORTHOPNEA

(See also, "Dyspnea," page 391.)

The patient cannot lie recumbent and must be raised above the horizontal position in order to breathe. It is merely a severe grade of dyspnea.

Cardiac Decompensation (Heart-Failure).—*Characteristics.*—In severe cases of heart-failure from any cause the dyspnea which is early and invariably present may increase in severity until orthopnea occurs.

Chief Signs.—Dyspnea increased by the slightest exertion; cough; edema, more or less extensive, with history of having commenced in the feet; oliguria; weak, rapid, low tension pulse; disturbances of the size, sound, and rhythm of the heart as developed by the physical examination.

Chronic Interstitial Nephritis (Uremia).—*Characteristics.*—The patient may sit up in bed and gasp for breath as in true asthma. There will have been sudden attacks of oppressed breathing particularly at night. This is often a uremic symptom, but is sometimes cardiac.

Chief Signs.—Insidious onset; dyspepsia; headache and giddiness; breathless-

ness and palpitation; nocturnal frequency of micturition; failing sight; general weakness; thinness; urinary changes (polyuria, light specific gravity, faint albumin, few casts, diminished urea); occasional hematuria; atheromatous arteries; hypertension (180-250); enlarged heart; dyspnea; albuminuric retinitis or optic neuritis; only slight edema if any.

Bronchial Asthma.—*Characteristics.*—During a paroxysm the patient bends forward and grips objects tightly to fix the scapulæ. The head is thrown back and the scalene and sternomastoid muscles are contracted to lift the thorax. Inspiration is short and expiration prolonged and wheezy. The attacks are frequently nocturnal.

Chief Signs.—See page 391.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—Orthopnea may occur as the result of pressure directly on the trachea or the left bronchus, or to abductor paralysis from pressure on the recurrent laryngeal nerves. There may be marked stridor, wheezing, cough, hoarseness, or aphonia.

Chief Signs.—See page 430.

Mediastinal Tumor.—*Characteristics.*—There may be orthopnea due to pressure. The patient commonly sits up with the head thrown back. In some cases he may be able to walk about without distress during the daytime but be unable to lie down at night.

Chief Signs.—See page 432.

Pericarditis with Effusion.—*Characteristics.*—As the effusion increases the patient sits up in bed. Dyspnea, which is a common and important symptom, will have preceded the orthopnea, and the patient will have been restless on this account, preferring to lie upon the left side.

Chief Signs.—Onset latent; anxiety and pallor; restlessness and insomnia, perhaps delirium; dyspnea (pulse respiration ratio may be 2-1); pain, at first precordial, later epigastric, increased by sternal pressure; rapid pulse, may be paradoxical; irritable cough; slight fever; physical examination (cardiac impulse wavy; may be precordial bulging; apex beat slight or absent; dull area increased, roughly pear-shaped, extending to the left beyond the apex beat; muffled heart sounds).

Less Common Causes.—Hypertrophic emphysema; enlarged thymus; goiter; cervical adenopathy; retropharyngeal abscess; laryngeal diphtheria; adenoids (nocturnal attacks); localized Hodgkin's disease; hemothorax; hydrothorax; acute edema of the larynx; acute abductor paralysis of the larynx; laryngismus stridulus; iodism; tabes dorsalis (laryngeal crisis); foreign body in the air passages; esophageal tumor; rupture of a caseous gland into the trachea; acute bronchitis; acute capillary bronchitis; pertussis; cor bovinum; ascites; tympanites; abdominal tumor; neurosis ("hysteria").

PAINS, GENERAL

Pain all over is very uncommon. Almost all painful states are to a great extent localized, though the localization may be more or less extensive.

For causes of pain in different regions of the body, see under the particular region.

Influenza (La Grippe).—*Characteristics.*—Widespread pain, especially marked in the back and bones, is often very severe.

Chief Signs.—Epidemicity or even pandemicity; sudden onset; headache; coryza; rapid prostration; chilliness; sweats; fever; few râles at the bases of the lungs; cough and expectoration in the respiratory type; nervous symptoms (headache, insomnia, delirium); varied complications; low leukocyte count.

Dengue (*"Break-Bone" Fever*).—**Characteristics.**—Intense, aching, generalized pains in the muscles and joints occur at the onset of the disease. Their atrocious character has given to the disease its sobriquet of "break-bone" fever.

Chief Signs.—Occurrence in tropical and subtropical climates; epidemicity; fever of six or seven days' duration; initial erythematous and terminal polymorphous eruption; benign course.

Trichiniasis.—**Characteristics.**—General muscular pain and tenderness are the outstanding features in the stage of myositis or migration and encapsulation of the embryos. There is pain on pressure and movement, and swelling and tension of the muscles, over which the skin may be edematous.

Chief Signs.—History of eating pork and of others affected; onset with abdominal pain, vomiting, and often diarrhea; fever of remittent or intermittent type (seventh to fourteenth day); edema, first of the face, then over the entire body; muscles swollen, hard, and tender; cough and dyspnea; aphonia; emaciation; anemia; eosinophilia and leukocytosis; duration two to eight weeks; examination of the suspected food for larvæ of the trichina; examination of the feces for the parasites; biopsy.

Less Common Causes.—Pernicious anemia; poliomyelitis; chronic myeloid leukemia (long bones); progressive muscular atrophy (irregular pains may precede the wasting); smallpox (in the back and limbs in initial stage); rickets; scurvy; gout; multiple neuritis; tabes dorsalis; osteomalacia; periarteritis nodosa; acute tonsillitis (pains in the back and limbs); myxedema; encephalitis lethargica; paralysis agitans.

PAIN, UNILATERAL

Hemiplegia Dolorosa (*Thalamic Syndrome*).—**Characteristics.**—There may be a subjective sensation of pain, associated with a sensation of heat and cold on the contralateral side of the body. The pains are intractable, paroxysmal, and hemiplegic in distribution, involving the face, trunk, and limbs.

Chief Signs.—Hemianesthesia of the affected side; hemiataxia on voluntary movement; choreo-athetoid movements.

Less Common Causes.—Chronic hemiplegia.

SENSATION, ABNORMALITIES OF ANESTHESIA

(*Hypo-Esthesia; Impaired Sensation*)

Universal anesthesia is exceedingly rare and occurs only in "hysteria." Hemianesthesia may be functional or organic. This caption includes diseases in which there is an impairment or loss of all forms of sensation, of one or more forms, or a dissociation of the forms. It, therefore, includes anesthesia or hypo-esthesia (loss or diminution of all forms of sensation), analgesia or hypo-algesia (loss or diminu-

tion of pain-sense), tactile anesthesia or hypo-esthesia (loss or diminution of tactile-sense), thermo-anesthesia (loss of temperature-sense), dissociated anesthesia (tactile and pain-sense preserved, sensibility to heat and cold diminished or lost), kinesthesia (loss of the sense of active muscular contraction), pallanesthesia (loss or diminution of the vibration sense), loss of the joint-sense, astereognosis (loss of the power of recognition of objects by the sense of touch), and deep analgesia (loss of the sensibility of muscles to pressure).

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics*.—Tabetic is the commonest of all anesthetics. Joint and vibration sense are usually impaired earlier than cutaneous sensations, whilst analgesia precedes tactile anesthesia. In the upper limbs the ulnar side is affected earlier than other digits. The ulnar nerve loses its sensitiveness. There may be a broad zone of analgesia with its upper border at the level of the second rib. There may be analgesia of the glans, testicles, and tendo achillis. Loss of deep sensibility in the feet is an important sign (the patient is unable to tell which toe is touched or in which direction it is moved). Deep analgesia is almost always present in the calf muscles. Astereognosis is also a common sensory defect.

Chief Signs.—See page 619.

Multiple Neuritis (*Except Lead Paralysis*).—*Characteristics*.—Loss or impairment of all forms of cutaneous sensibility may occur, especially over the distal portions of the limbs, with a shading off toward the proximal parts (glove and stocking anesthesia.)

Chief Signs.—See page 648.

Transverse Myelitis (*Infective or Syphilitic*).—*Characteristics*.—Impairment or loss of sensibility is present below the level of the lesion according as the lesion is complete or incomplete. Some degree of dissociation may be observed in the incomplete variety.

Chief Signs.—See page 620.

Neurosis (“*Hysteria*”).—*Characteristics*.—“Hysterical” anesthesia is extremely common and of the greatest diagnostic value. It may be complete, partial, or dissociated. Its commonest distribution is a hemianesthesia, often left-sided. It may include the mucous membranes. In many cases, though unilateral, it is more marked on the face or limbs than on the trunk. It may affect special levels of a limb (knee, elbow, shoulder), or it may stop abruptly at some horizontal line (shoe, sock, stocking, mitten, glove, sleeve), the so-called “segmental” type. Most cases of “hysterical” anesthesia also have diminution or loss of the special senses. It varies in degree from total anesthesia down to the slightest degree of comparative blunting of sensation.

Chief Signs.—See page 738.

Nerve Trauma.—*Characteristics*.—Anesthesia is confined to the distribution of the nerve or nerves affected. If a cutaneous nerve is paralyzed, superficial sensibility is lost and deep sensibility retained. If a mixed nerve trunk is involved, the anesthesia is both cutaneous and deep and accompanied by muscular paralysis and atrophy. As a mixed nerve recovers, sensation returns before motor power.

Fracture-Dislocation of the Spine.—*Characteristics*.—Sensory paralysis below the level of the lesion occurs and varies in severity according to the degree of destruction of the cord.

Chief Signs.—See page 625.

Cerebral Tumor (*Sensory Area*).—*Characteristics.*—Tactile localization and sense of movement are most impaired; sensory loss is more pronounced in distal than in proximal parts of the limbs. The affected skin areas have no relation to peripheral or spinal sensory distribution. The extent of sensory loss may be restricted to more or less definite areas, such as a hand, a limb, or one side of the body. Astereognosis is present. All these symptoms are on the side opposite the tumor.

Chief Signs.—See page 687.

Syringomyelia (*Spinal Gliosis*).—*Characteristics.*—Dissociated anesthesia is characteristic of this disease. There is loss of sensation to heat, cold, and pain, with retention of sensation to light touch. The limits are sharply defined and the distribution usually asymmetrical and irregular, corresponding to segments or parts of segments. Heat, cold, and pain are equally affected, or heat slightly more than the cold and cold more than pain.

Chief Signs.—See page 317.

Brown-Sequard Paralysis (*Hemisection of the Cord*).—*Characteristics.*—(1) On the side of the lesion there is a zone of anesthesia with an area of hyperesthesia above at the line of the affected segment, and loss of the sense of position and localization of touch below the segment. (2) On the side opposite the lesion there is a loss of sensation of pain and temperature, and touch may be slightly affected.

Chief Signs.—See page 623.

Tumor of the Spinal Cord (*Intra-medullary*).—*Characteristics.*—The earliest signs are found in disturbances of sensation. These are a local segmental dissociation of sensation (loss of painful and thermal with retention of tactile sensibility), and the occurrence of the Brown-Sequard symptom-complex below the level of the lesion (loss of painful and thermic sensibilities on the side opposite the motor paralysis).

Chief Signs.—Unilateral onset; root symptoms absent or slight; dissociated anesthesia as above; paralysis on the side of the lesion; sphincters affected; deep reflexes increased on the side of the tumor; Babinski present on the side of the tumor; lemon-yellow spinal fluid with increased globulin.

Tumor of the Spinal Cord (*Extra-medullary*).—*Characteristics.*—Impairment or loss of all forms of sensation below the level of the lesion and coinciding with the distribution of the motor phenomena occurs, but these objective sensory symptoms are late in onset. The Brown-Sequard symptom-complex may be observed in many cases (see above).

Chief Signs.—Unilateral onset; root symptoms early and severe; anesthesia as above; paralysis on the side of the lesion; sphincters affected late; increased reflexes and Babinski on the side of the lesion; lemon-yellow spinal fluid with increased globulin.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—Slight relative losses of cutaneous sensibility may be detected in the parasthetic areas, more especially to cotton-wool, and the finer degrees of heat, cold, and tactile discrimination, although all forms of sensibility may be slightly impaired. Transient hemianesthesia may be an initial symptom in rare cases, and unilateral astereognosis with loss of sense of position on one side may occur.

Chief Signs.—See page 626.

Herpes Zoster (*Shingles; Zona*).—*Characteristics*.—The anesthesia follows the attack of zoster, sometimes lasts for a considerable time after the eruption has disappeared, and involves the skin area which has been affected by the eruption.

Chief Signs.—See page 774.

Less Common Causes.—Apoplexy (hemianesthesia slight and transient); thrombosis of the posterior inferior cerebellar artery (thermo-anesthesia and analgesia on the same side of the face and on the trunk and limb of the opposite side); leprous neuritis (patchy anesthesia); cervical rib (anesthesia of peripheral type); caisson disease (in marked cases diminution of all forms of sensibility, of irregular and patchy distribution); spinal caries (sensory loss very late); malignant disease of the vertebræ (sensory loss late); myxedema; dementia præcox; aneurysm of the descending aorta (third and fourth interspaces); anterior crural paralysis (thigh and inner side of the leg and foot); spinal apoplexy or hematomyelia (lower extremities); chorea; Friedreich's disease (legs); general paresis; insanity; Klumpke's paralysis (inner side of the arm); Morvan's disease; neuroma; Raynaud's disease; sciatica; external spinal pachymeningitis; tetany.

HYPERESTHESIA

Hyperesthesia can usually be distinguished from tenderness by the skin or muscle being unduly sensitive after it has been raised from the subjacent tissue. It may be elicited by the lightest brush with the finger.

Neurosis (*"Hysteroneurasthenia"*).—*Characteristics*.—The hyperesthesia may be rarely universal, and occasionally involves half the body (hemihyperesthesia). Odd irregular areas of hyperesthesia are amongst the commonest stigmata of "hysteria" and do not correspond either to root areas or to the distribution of the peripheral nerves. It is common over joints and the vertebral spines.

Chief Signs.—See page 738.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics*.—Tactile hyperesthesia is especially common in cases with gastric or other visceral crises, in the root areas corresponding to the viscera affected. It is also common in the areas where lightning pains are felt and may be one of the earliest evidences of the disease. It may occur on the trunk, limbs, or face.

Chief Signs.—See page 619.

Trigeminal Neuralgia (*Tic Douloureux*).—*Characteristics*.—The hyperesthesia exists over areas supplied by one or more branches of the fifth nerve and is especially exquisite over the foramen of exit of the branches involved (supra-, infra-orbital, mental).

Chief Signs.—See page 31.

Neuralgia and Neuritis.—*Characteristics*.—Hyperesthesia occurs in the area of the peripheral nerve involved, especially over the foramen of exit.

Chief Signs.—See page 665.

Herpes Zoster (*Shingles; Zona*).—*Characteristics*.—Localized hyperesthesia sometimes precedes the eruption and may persist for weeks or months after the eruption has passed away.

Chief Signs.—See page 774.

Multiple Neuritis (*Peripheral Neuritis*).—*Characteristics*.—The hyperesthesia

involves chiefly the hands and feet, and there is often present a certain degree of anesthesia. The coexistence of hyperesthesia (hyperalgesia) to light pressure, with anesthesia to light touch, is very characteristic of alcoholic neuritis.

Chief Signs.—See page 648.

Thalamic Syndrome.—*Characteristics.*—Hemihyperesthesia to temperature and pain sometimes coexists with hemianesthesia to tactile stimuli and with impairment of joint-sense, loss of osseous sense, and astereognosis in the affected limbs.

Chief Signs.—See page 756.

Subacute Combined Degeneration of the Cord.—*Characteristics.*—Hyperesthesia referred to peripheral parts of the four extremities is among the earliest signs.

Chief Signs.—See page 625.

Less Common Causes.—Acute bronchitis (sternal); alcoholism; appendicitis (right iliac region); Brown-Sequard paralysis (paralyzed side); spinal caries (zone above anesthesia); spinal cord compression (zone above anesthetic area); nerve injury (gunshot, etc.); cerebrospinal meningitis; acute myelitis; peritonitis; pernicious anemia; pulmonary tuberculosis (second and fifth spaces unilaterally); pregnancy; rickets; meningeal hemorrhage; brain tumor; angina pectoris (precordial); tuberculous meningitis, spinal; ovarian disease; acute mania; encephalitis; internal spinal meningitis; spinal cord tumor, extra-medullary (zone above the area of anesthesia).

PARESTHESIA

(See also "Sensations, Subjective, of Heat, Cold, Throbbing, Oppression, etc.," page 762; "Numbness and Tingling of One or Both Upper Extremities," page 336; "Numbness and Tingling of One or Both Lower Extremities," page 630; "Chills or Rigors," page 673; and "Itching," page 730.)

Paresthesia, or perverted sensation, has much the same diagnostic significance as hyperesthesia. Among the paresthesias are numbness, tingling, itching, formication, and Magnan's paresthesia (a subjective feeling as of sand or worms under the skin); in the various pyrexias sensations of cold and heat are common.

Neurosis ("Hysteria"; "Neurasthenia").—*Characteristics.*—Various perversions of sensation may occur. A touch on one limb may be felt on the opposite side (allocheiria); intense pain may be felt from slight touch (haphalgesia); paresthesias of special senses also occur, as monocular diplopia and micropsia.

Chief Signs.—See page 738.

Transverse Myelitis (*Infective or Syphilitic*).—*Characteristics.*—The first symptoms are usually subjective sensations of pain, numbness, or burning. The painful sensations are referred to the upper level of the affected segments (meningomyelitis), the numbness and tingling to the limbs below the level of the lesion. Numbness or paresthesia may precede weakness, but usually they occur simultaneously.

Chief Signs.—See page 620.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics.*—Feelings of constriction by hot or painful bands occur, of which the "girdle sensation" is the most common example. Besides these a sensation of compression and numbness and

tingling are commonly described, especially in the hands and feet, and a sensation as of walking on cotton-wool is also common. These subjective phenomena are usually early symptoms.

Chief Signs.—See page 619.

Nerve Trauma (*or Localized Neuritis*).—*Characteristics.*—Numbness, tingling, “pins and needles,” or sensations of burning pain are referred to the distribution of the affected nerve or plexus.

Chief Signs.—History of trauma; atrophic paralysis of flaccid type; abolition of tendon reflexes; reaction of degeneration; anesthesia, superficial or deep or both, depending on the character of the nerve involved; trophic changes; deformities and contractions late.

Multiple Neuritis (*Peripheral Neuritis*).—*Characteristics.*—Sensations of deadness, numbness, tingling, and burning are felt in the hands and feet as early symptoms, especially in alcoholic, arsenical, and diabetic types.

Chief Signs.—See page 648.

Cerebral Thrombosis.—*Characteristics.*—Local symptoms, such as numbness and tingling, or transitory paresis are referred to the region of the body subsequently affected by the stroke. They may precede the attack for several hours or days.

Chief Signs.—See page 797.

Arteriosclerosis.—*Characteristics.*—Numbness and tingling of the hands, arms, feet, or legs, and neuralgias which follow the arteries are not infrequent.

Chief Signs.—See page 831.

Subacute Combined Degeneration of the Cord.—*Characteristics.*—Sensations of numbness and coldness in the distal parts of the limbs are among the earliest symptoms, and affect the feet earlier and more severely than the hands. They are unaccompanied by any obvious circulatory derangement.

Chief Signs.—See page 625.

Pernicious Anemia.—*Characteristics.*—Numbness and tingling, particularly in the feet and legs, less often in the upper extremities, is a matter of complaint in about one-third of the cases of Addisonian pernicious anemia.

Chief Signs.—See page 643.

Acroparesthesia.—*Characteristics.*—Numbness and tingling of the fingers and palms of the hands associated with a burning pain occur chiefly in the latter part of the day after work is over. Occasionally a similar condition occurs in the feet.

Chief Signs.—See page 330.

Raynaud's Disease.—*Characteristics.*—Numbness or tingling or pains in the fingers occur, and the fingers are white and cold, becoming in an hour or so red and hot.

Chief Signs.—See page 647.

Endarteritis Obliterans (*Claudication, Dysbasia Angiosclerotica*).—*Characteristics.*—Numbness, tingling, and paresthesia of various forms are common symptoms.

Chief Signs.—See page 630.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—Numbness over the limbs, body, or face, and other paresthesias, with feelings of heaviness and weight in the limbs, are common. None of these sensations are painful.

Chief Signs.—See page 626.

Less Common Causes.—Aconite poisoning; aneurysm; appendicitis; cerebral hemorrhage; cerebral embolism; epileptic aura; beriberi; bromism; cervical rib (hand); leprosy; von Recklinghausen's disease; sciatica; tetany; meralgia paræsthetica; syringomyelia; angioneurotic edema; hematomyelia; cocain habit (Maggan's paresthesia—sensation of sand and worms under the skin); Erb's syphilitic spinal paralysis; osteo-arthritis (vertebral form); spinal cord tumor (extra-medullary); erythromelalgia (heat sensation); thrombo-angiitis obliterans (Buerger's disease); migraine (numbness of the tongue and face, sometimes hand).

SENSATIONS, SUBJECTIVE, OF HEAT, COLD, THROBBING, OPPRESSION, ETC.

(See also "Palpitation," page 458.)

Menopause.—*Characteristics.*—Sensations of heat may be felt, especially intense about the face and neck, often associated with flushing of the skin and palpitation.

Chief Signs.—See page 573.

Myxedema.—*Characteristics.*—Sensations of coldness are complained of and the patients suffer almost continuously from cold except in warm weather.

Chief Signs.—Symptoms of lowered metabolism (inactivity, mental and physical); myxedematous swelling of the face and extremities (absence of pitting on pressure); rheumatic pains; low basal metabolic rate.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics.*—Various paresthesias are complained of, particularly heat sensations, flushing, and throbbing.

Chief Signs.—See page 288.

Essential Hypertension.—*Characteristics.*—Sensations of throbbing or pounding in the ears, especially noticeable in bed at night, are often felt.

Chief Signs.—See page 668.

Neurosis ("*Hysteria*"; "*Neurasthenia*").—*Characteristics.*—Distressing sensations of throbbing may be felt in the epigastrium. Other subjective sensations may be palpitation of the heart, pains and oppressive feelings in the cardiac region, and flushes of heat especially in the head.

Chief Signs.—See page 738.

Aortic Regurgitation.—*Characteristics.*—Various subjective sensations may be complained of even prior to any evidence of failing compensation. There may be an annoying palpitation or throbbing sensation in the precordium, a sense of sub-sternal oppression and pain, or painful attacks of the nature of pure angina.

Chief Signs.—See page 453.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—In the beginning a sense of precordial oppression or actual pain may become noticeable upon exertion.

Chief Signs.—See page 430.

Dyspepsia.—*Characteristics.*—A sensation of oppression in the epigastrium is a common symptom and may amount to acute pain.

For causes of Dyspepsia, see page 487.

Cardiac Hypertrophy.—*Characteristics.*—In some instances the violent action

of the heart may give rise to pain in the region of the heart, throbbing sensations in the head and neck, and pulsatile noises in the ears.

For causes of Cardiac Hypertrophy, see page 437.

Angina Pectoris.—*Characteristics.*—In the mildest forms (*formes frustes*), a feeling of substernal tension, uneasiness, or distress, rising at times to positive pain, may occur.

Chief Signs.—See page 367.

Syphilitic Aortitis.—*Characteristics.*—There may be only a feeling of oppression beneath the sternum or the patient may experience actual pain. The onset of these symptoms is apt to be paroxysmal.

Chief Signs.—See page 454.

Bronchial Asthma.—*Characteristics.*—A sense of tightness in the chest may be a premonitory symptom, and the attack begins with a feeling of great oppression in the chest.

Chief Signs.—See page 391.

Less Common Causes.—Dynamic aorta (throbbing in the neck); emphysema (sensation of oppression); migraine (throbbing); anemia (throbbing); mediastinal tumor (precordial oppression); pericarditis with effusion (precordial oppression).

SHOCK AND COLLAPSE

Shock and collapse differ only in degree. Shock and collapse follow a sudden general prostration of the vital powers, the result of injury or emotion. Powerful afferent impulses are transmitted along the sensory, sympathetic, or special sense nerves to the vital centers, especially the vasomotor centers, which are thus weakened, exhausted, or paralyzed; consequently there are marked lowering of blood-pressure, weakening of the propelling force of the heart and arteries, collection of blood in the veins, especially the large abdominal veins, and anemia of the brain, lungs, and superficial parts of the body. The usual symptoms are pallor, cold sweat, pinched face, dilated, feebly reacting pupils, weak and usually accelerated pulse, shallow irregular breathing, mental apathy, subnormal temperature, impaired sensation of the skin, retention of urine, restlessness (after hemorrhage). Later, during reaction there may be vomiting, great restlessness or excitement, or even delirium. Shock which does not appear for several hours is most frequently seen after railway accidents, alcoholic intoxication, or severe emotional stress. The symptoms of hemorrhage, visible or invisible, are practically identical with those of shock, in fact, the condition after hemorrhage is shock due to loss of blood. The shock following hemorrhage is specially characterized by great restlessness, great anxiety and foreboding, loss of vision, thirst, gasping for air, pallor, and a rapid pulse which is apt to be larger and more compressible than in shock from other causes.

Severe painful states (as renal and biliary colic) may induce varying degrees of shock or collapse. Severe diarrheas (cholera, ileocolitis) may lead to collapse. The same is true of conditions accompanied by hyperpyrexia. In surgical operations shock usually comes on gradually but may arise suddenly, as when the femur is sawed through or when there is a burst of blood from a large vessel. Shock may follow the removal of a large tumor or a quantity of fluid from the abdomen. Prolonged anesthesia may cause shock. Crushes and compound fractures of the

extremities often produce extreme shock, and the nearer to the body the injury is located the greater is the degree of shock.

Simple Abdominal Contusion.—*Characteristics.*—The degree of shock will be in proportion to the severity of the injury, and death may result from shock even without gross injury to the viscera. As a rule, the shock symptoms soon subside.

Chief Signs.—History of abdominal injury, especially blows, kicks, punches, crushes, falls; may be external evidence of contusion.

Abdominal Contusion with Visceral Injury.—*Characteristics.*—Shock is severe in any type of visceral injury, whether the viscus be a solid organ or a hollow one. Injury of the upper abdomen causes more serious shock than that of the hypogastric region. If the symptoms of shock following abdominal contusion do not pass off within six hours, hemorrhage or peritonitis is almost certainly present. When the liver or spleen is ruptured shock is severe and progressive. In contusion or rupture of the kidney shock is severe but passes off in an hour or two. In rupture of the intestine, after an initial shock there may be a lull in the symptoms, which is followed, however, by the onset of peritonitis.

Acute Appendicitis.—*Characteristics.*—A sudden perforation or rapid gangrene produces collapse. The temperature falls, hiccough begins, abdominal distention, pain, and tenderness become marked and general, and the pulse becomes very rapid. In some cases these graver symptoms are present from the start (fulminating cases).

Chief Signs.—See page 679.

Perforated Duodenal Ulcer.—*Characteristics.*—The signs and symptoms develop in three stages, the stage of primary shock, the stage of reaction (with masked peritonitis), and the stage of advanced general peritonitis with secondary toxic shock. The primary shock is sudden in onset and severe, and lasts for an hour or two. The intensity of this initial shock then subsides, when the patient looks better and feels more comfortable, although the abdominal signs continue to develop; then gradually the secondary shock stage develops with the characteristic symptoms of frank peritonitis.

Chief Signs.—See page 467.

Acute Intestinal Obstruction (*Bands or Adhesions*).—*Characteristics.*—In severe cases the pulse may be weak, the skin cold and sweating, the temperature subnormal, and the pupils dilated; but, as a rule, the symptoms are not so severe as this, and in most cases of severe primary shock a reaction follows and the patient though still in pain appears to feel a little better. The higher up the obstruction the greater is the initial shock.

Chief Signs.—Pain severe from the onset, at first spasmodic, may later be continuous; constant vomiting in small bowel obstruction; may be constant nausea but no vomiting in large bowel obstruction; constipation after emptying of the bowel below the obstruction; later abdominal distention and tenderness; may be visible peristalsis.

Intussusception.—*Characteristics.*—There is great prostration or even collapse, with pallor, feeble pulse, apathy and normal or subnormal temperature; the abdomen is relaxed.

Chief Signs.—Occurrence usually in infants under two years of age (especially between six and twelve months); sudden onset; severe pain and vomiting (pain

paroxysmal every few minutes, and vomiting first of stomach contents, afterwards bilious); one or two stools, then only blood or bloody mucus without feces; tumor in the epigastrium or left iliac fossa (may be felt per rectum); later tympanites.

Strangulated Hernia.—*Characteristics.*—The shock is the same as in acute obstruction (see above).

Chief Signs.—See page 678.

Perforated Gastric Ulcer.—*Characteristics.*—Shock similar to that in perforated duodenal ulcer is present (see above).

Chief Signs.—See page 467.

Acute Hemorrhagic Pancreatitis.—*Characteristics.*—Shock is profound.

Chief Signs.—Commonly occurrence in men over middle age; sudden onset; severe agonizing abdominal pain felt chiefly in the epigastrium but may radiate to the left scapular region; severe and frequent vomiting and retching, never feculent; extreme rigidity of the abdominal wall, especially in the epigastrium, with tenderness, later abdominal distention and reactive fever; may be ecchymosis or discoloration of one or both loins; may be slight jaundice or history of previous indigestion or jaundice; may be fullness or tumor in the pancreatic region.

Acute General Peritonitis.—*Characteristics.*—When a large amount of infective material is suddenly diffused through the peritoneum there is sudden profound shock and violent pain. The patient may survive the shock only to develop the symptoms of a progressive general peritonitis with toxic shock.

Chief Signs.—See page 516.

Ectopic Pregnancy (Ruptured).—*Characteristics.*—Marked faintness and collapse, which gradually deepens, follow the intense lancinating pain in one or other ovarian region which is usually the first manifestation of the abnormal pregnancy.

Chief Signs.—History of amenorrhea or irregular uterine bleeding or passage of a decidual cast from the uterus; sudden abdominal pain; vomiting; tender, tumid abdomen; free fluid in the abdominal cavity; tenderness on vaginal examination; retro-uterine, later pelvic hematocele; signs of progressive anemia.

Angina Pectoris.—*Characteristics.*—In severe cases the face is usually pallid and may assume an ashy gray tint, and not infrequently a profuse sweat breaks out over the surface. The patient feels as if death were imminent.

Chief Signs.—See page 367.

Coronary Thrombosis.—*Characteristics.*—Severe collapse follows an attack of precordial anginoid pain with fall in blood-pressure and dyspnea.

Chief Signs.—See page 670.

Acute Pneumothorax.—*Characteristics.*—In many cases there is every evidence of severe shock following a sudden tearing or severe pain in the side and great difficulty in breathing.

Chief Signs.—See page 416.

Rupture of Aortic Aneurysm.—*Characteristics.*—Sudden collapse follows a sudden and intense pain or a feeling as of something giving way within. Dyspnea and rapid blanching of the skin follow, ending in sudden death or death preceded by coma.

Chief Signs.—See page 692.

Corrosive Poisoning.—*Characteristics.*—The degree of shock and collapse depend upon the nature of the poison and the amount taken.

Chief Signs.—History of ingestion; nausea and violent vomiting; tenderness and severe pain in the epigastrium; diarrhea; may be blood in the stools; chemical examination of the vomitus, feces, or urine.

Severe Burns.—*Characteristics.*—The symptoms of the first stage are intense pain and shock varying with the extent and severity of the burn.

Cerebral Concussion.—*Characteristics.*—In a well-marked case with some degree of unconsciousness collapse is present, which may last from minutes to hours and ends either in death or in the stage of reaction. Besides the usual symptoms of collapse, the sphincters may be paralyzed and transient paralyses may exist. Vomiting usually inaugurates the stage of reaction following the collapse.

Chief Signs.—See page 10.

Fracture of the Skull.—*Characteristics.*—Initial shock is common, especially in fractures of the base. The symptoms are usually those of severe concussion or compression. The concussion itself may lead to collapse and death, and compression causes paralysis of first the cortical and finally the bulbar centers.

Chief Signs.—See page 676.

Less Common Causes.—Malaria; phosphorus poisoning; acute alcoholism; perforation of the diaphragm; pneumoperitoneum; hydrothorax; ruptured ovarian cyst; embolism of the pulmonary artery; fat embolism; gangrene of the lung; glanders; inversion of the uterus; pellagra; acute miliary tuberculosis; endocarditis; tobacco poisoning; blastomycosis; acute yellow atrophy of the liver; encephalitis; trauma of the testis; typhoid perforation of the bowel; rupture of the uterus, bladder, heart, liver, spleen; perforation of the intestine from gunshot or stab wounds; thrombosis of the mesenteric artery.

SKIN, AFFECTIONS OF ERYTHEMA, GENERAL

This term is a somewhat indefinite one and indicates a hyperemia or redness of the skin, non-inflammatory and non-exudative; but practically, erythema readily shades off into a true inflammatory condition.

Scarlet Fever (*Scarlatina*).—*Characteristics.*—The eruption first appears on the chest and neck and rapidly spreads over the whole skin; the color is a vivid red, the eruption being at first distinctly punctate, but soon becoming confluent, with brighter red spots showing through. It appears in about twenty-four hours and begins to fade after the third day, desquamation following as the eruption fades. The rash disappears on pressure unless petechial. Miliary sudamina or even vesicles may be present. Petechiæ are not uncommon. Face, scalp, palms, and soles are rarely affected. There is circumoral pallor.

Chief Signs.—Occurrence mainly in children; incubation one to seven days; sudden onset with vomiting, sore-throat, fever (103°-104° F.); rapid pulse; strawberry tongue; fauces red and swollen; follicular tonsillitis or membranous angina; fever maximum on the third day, normal in one week; desquamation following the rash (beginning on the sixth to the eighth day, last on the palms and soles); leukocytosis with eosinophilia; may be nephritis, otitis media; Dick test positive the first few days; blanching test positive during the eruption.

Measles (*Morbilli*).—*Characteristics.*—A transient prodromal erythema is not

uncommon, usually only on the trunk. A blotchy erythema resembling the true rash of measles may, however, be present instead.

Chief Signs.—See page 770.

German Measles (*Rötheln, Rubella*).—*Characteristics.*—Discrete rose-pink spots appear almost simultaneously on the face, trunk, and arms and spread to the lower extremities in twenty-four hours. On the trunk and limbs the spots often coalesce rapidly and the rash resembles scarlet fever. Occasionally macules form. The rash lasts one to two days.

Chief Signs.—Incubation period fourteen to twenty-one days; acute onset with mild symptoms; enlarged occipital glands; duration one to two days, rarely three.

Variola (*Smallpox*).—*Characteristics.*—A prodromal scarlatiniform rash may appear on the second day, either general or roughly in the “bathing-drawers area.”

Chief Signs.—See page 770.

Food Poisoning (*Allergy*).—*Characteristics.*—Next to urticaria, a diffuse erythema occurs most commonly, covering almost the entire body or distributed bilaterally on the hands and forearms.

Chief Signs.—See page 701.

Serum Rash (*Anaphylaxis*).—*Characteristics.*—Various sera may cause a rash appearing in seven to fourteen days, usually ten. It may be an erythema. Often the irritation is extreme.

Chief Signs.—History of injection; may be pyrexia and joint pains.

Drug Rash.—*Characteristics.*—Certain drugs (acetanilid, antipyrin, aspirin, quinin, belladonna, chloral, copaiba, mercury, opium, sulphonal, salicylates, etc.), when taken internally, may cause an erythematous rash, which disappears upon withdrawal of the drug. The eruption is not punctiform.

Chief Signs.—History of drug-taking; sudden onset; marked subjective symptoms; disappearance on withdrawal of the drug.

Injection of Arsenicals (*Arsphenamin, Neo-Arsphenamin, Cacodylates*).—*Characteristics.*—General erythema sometimes develops. It may be followed by desquamation and a true dermatitis exfoliativa.

Septicopyemia.—*Characteristics.*—Transient erythema may occur.

Chief Signs.—Rigors and sweats; pyrexia; small, soft, rapid pulse; prostration; gastro-enteric disturbances; pallor; petechial hemorrhages; leukocytosis; albuminuria; may be a focus of suppuration; may be embolic phenomena.

Enema Rash.—*Characteristics.*—Erythema may follow within a few hours after an enema; it is usually confined to the trunk.

Chief Signs.—History of enema; absence of constitutional symptoms.

Flannel Rash.—*Characteristics.*—The wearing of flannel clothing may cause an erythema in the region covered.

Chief Signs.—History of wearing flannel.

Dermatitis Exfoliativa.—*Characteristics.*—The skin is hyperemic and red, this being followed by inflammatory infiltration. After a short period (several days to a week or more) exfoliation takes place as thin, variously sized flakes or imbricated scales of dirty gray color. The underlying skin is smooth, red, and shiny. The rash and scaling persist for several weeks.

Chief Signs.—Mild constitutional symptoms; tendency to relapses and recurrences; may be eosinophilia; may occur after arsphenamin therapy.

Erythema Scarlatiniforme.—*Characteristics.*—The eruption is a diffuse erythematous one that appears abruptly, shortly covers the entire cutaneous surface and sometimes even the mucous membranes of the mouth, eye, vagina, and rectum, and may last two weeks or more. Furfuraceous scaling begins almost from the onset. The rash may be measly or scarlatiniform or it may resemble erythema multiforme.

Chief Signs.—Acute onset with headache, malaise, depression, mild fever; may be gastro-enteric disturbances, bronchitis, or nephritis; absence of tongue and throat symptoms; absence of Koplik's spots; may be recurring attacks.

Less Common Causes.—Ptomain poisoning; cerebrospinal meningitis; malaria; leprosy; diphtheria; gout; dengue; dermatitis exfoliativa neonatorum; fourth disease; acute rheumatism; hydatid disease; tapeworm; filariasis; Meige's disease; trypanosomiasis; snake bite; influenza; anterior poliomyelitis; acute catarrhal tonsillitis; varicella (prodromal rash); erythema multiforme.

ERYTHEMA, LOCAL

Certain drugs, including all rubefacients, locally applied, may cause an erythema. Certain trades requiring the handling of irritating substances may act in a similar manner. Of the former class may be mentioned turpentine, mustard, ammonia, croton oil, cantharides, capsicum, phenol, acids, alkalies, alcohol, chrysarobin, mercurials, iodoform, mesotan, salicylates. In the latter class may be included varnishes, paints, anilin dyes, certain fish, tar products, resins, sawdust, and poisonous plants. Parts subjected to extremes of heat and cold may develop erythema. Erythema is common in the neighborhood of inflammatory foci (abscesses, infection, etc.).

Bites and Stings.—*Characteristics.*—Local erythema and edema with intense itching and irritation may occur. If due to insect bites a central puncture is present. Stings of jelly-fish may be followed in twelve to twenty-four hours by a general erythema.

Chief Signs.—History of a bite or sting.

Intertrigo (Chafing).—*Characteristics.*—Diffuse redness, moisture, and a feeling of soreness and burning may occur, commonly in children and fat subjects, between opposed surfaces of the skin subjected to friction, especially in the diaper region of children, inner surfaces of the thighs in adults, and the skin beneath the breasts in women.

Lymphangitis (Cellulitis).—*Characteristics.*—A dusky redness with intense pain, local heat, redness, and edema occurs in the region of the wound or infection. The lymphatic vessels running from the affected area may be red, tense, and tender.

Chief Signs.—Presence of an infected wound or lesion; painful glandular swellings; may be sloughing and gangrene; constitutional symptoms.

Burns and Sunburn.—*Characteristics.*—Erythema, accompanied by heat, slight swelling, and burning sensation, occurs in the exposed area (first-degree burn).

Erysipelas.—*Characteristics.*—The skin of the affected area (usually the face, eyes, lips, and scalp) becomes red, hot, smooth, tense, and edematous. There

is a definite, spreading, red edge, the center fading with the advance of the edge. Blebs are common, and desquamation follows in four or five days.

Chief Signs.—Acute onset with malaise, rigor, pyrexia, fever (104° – 105° F.), subsiding by crisis or rapid lysis in ten to fourteen days.

Urticaria.—*Characteristics.*—The wheals are surrounded by red areolæ and may themselves be pinkish in color.

Chief Signs.—See page 784.

Phlebitis.—*Characteristics.*—There may be redness of the skin when the perivascular tissues are involved.

Chief Signs.—See page 614.

X-Ray and Radium Effect.—*Characteristics.*—Acute x-ray burns of slight degree cause a simple erythema that may not come on for from ten to twenty days after exposure. The nails may temporarily fall out. The reaction usually subsides in a week or ten days unless it be a cumulative reaction the result of many small treatments. Radium may have the same effects. Brown pigmentation and telangiectasia may follow.

Chief Signs.—History of exposure to x-ray or radium.

Local Serum Reaction.—*Characteristics.*—A positive reaction is marked by a circular area of erythema, or a wheal surrounded by an erythematous areola.

Raynaud's Disease.—*Characteristics.*—Active hyperemia of the parts affected (fingers, toes, ears, nose) follows the stage of local asphyxia; the area is red, hot, swollen, throbbing, and painful.

Chief Signs.—See page 647.

Erythematous Eczema.—*Characteristics.*—The disease commences as ill-defined, reddish blotches that are covered by furfuraceous scales and accompanied by intense itching.

Chief Signs.—See page 731.

Pellagra.—*Characteristics.*—Persistent erythema of the backs of the hands is present, usually stopping short at the line of the sleeves. There may also be an erythema of the skin of the face, neck, elbows, knees, and dorsal surfaces of the feet. In severe cases the skin affected becomes dry, swollen, and desquamates, or wet pemphigoid lesions develop. After repeated attacks the skin is pigmented, dry, and thickened. The lesions are always symmetrical and a sharp line of demarcation common. The genitals may be affected.

Chief Signs.—Insidious onset; spring recrudescences common; first diarrhea, then erythema, then dementia; stomatitis; progressive emaciation.

Erythema Nodosum.—*Characteristics.*—Sharply circumscribed, tender, bright-red, subcutaneous nodules occur, most commonly on the tibial aspect of the legs. The lesions may later fluctuate but never suppurate. They gradually turn yellow, blue, and green like a bruise.

Chief Signs.—Occurrence usually before thirty; incidence more common in females; acute onset with malaise, fever, headache, rheumatoid pains; duration a few days to several weeks.

Less Common Causes.—Smallpox; gout; erythromelalgia; erythema induratum; Jaquet's erythema; polymyositis; trichinosis; rat-bite fever; Meiges' disease; extravasation of urine; angioneurotic edema; erythema artefactum (malingering); neurosyphilids; injection of arsenicals; erysipeloid; livedo reticularis.

MACULES

Macules are circumscribed, discolored patches of varying shapes and sizes, which cannot be felt. Purpuric spots, which according to this definition would be macules, are considered under a special place (see Hemorrhages into the Skin, page 789). Freckles, birth-marks, and stains are in reality macules but do not require description.

Measles (*Morbilli*, *Rubeola*).—*Characteristics*.—In the early stages, small red spots like flea-bites appear followed in a few hours by the typical eruption. This comes out first on the face and rapidly spreads to the entire body. Dusky red macules which may be arranged in crescentic patches constitute the eruption and do not entirely disappear on pressure.

Chief Signs.—Incubation seven to twenty-one days; occurrence usually in children; initial symptoms of coryza, photophobia, redness and lacrimation, sneezing, cough; appearance of the eruption on the third or fourth day; fever 103°–104° F.; remission on the second day, recrudescence at the time of the eruption, dropping in three or four days; branny desquamation after three or four days as the eruption fades; Koplik spots in the mouth preceding the eruption; leukopenia.

Syphilis.—*Characteristics*.—Roseolous spots of various sizes and shades of redness occur upon the trunk and limbs and less extensively upon the face in secondary syphilis. They give no subjective symptoms. They are sometimes annular.

Chief Signs.—History of primary lesion three to ten weeks previously; joint pains; sore throat and mouth; alopecia; more or less glandular enlargement; may be constitutional symptoms; positive Wassermann.

Pityriasis Rosea (*Macular Variety*).—*Characteristics*.—A profuse macular eruption appears upon the trunk and upper portions of the arms and legs. The lesions are oval, from one-half to one inch in length, and the long axes of the lesion are parallel with the direction of the ribs. The color at first is bright rosy-red. The lesions are sharply defined and distinctly scaly. In a few days the centers of the patches are yellowish, the edges remaining rosy.

Chief Signs.—"Herald patch" usually on the flank; mild sore-throat and malaise; sudden spread of the eruption; duration several weeks to a few months.

Variola (*Smallpox*).—*Characteristics*.—A prodromal morbilliform rash may appear, usually limited to the lower abdomen and inner aspects of the thighs. The true eruption is first macular: the spots are bright red, one-tenth of an inch in diameter, and disappear on pressure. It appears on the fourth day, first on the forehead, backs of the wrists and hands, and often at the same time in the mouth and fauces. It then spreads to the face, trunk, and extremities, last on the lower extremities, palms and soles. In a few hours the macules become papules.

Chief Signs.—Incubation nine to fifteen days (usually twelve); sudden onset with rigors or convulsions, frontal headache, vomiting, fever (104° F.), rapid pulse, prostration; eruption on the fourth day, the fever dropping; macular, papular, vesicular, pustular stages; fever rising with the formation of pustules; lysis from the tenth day; decrustation; may be confluent or hemorrhagic.

Tinea Versicolor (*Pityriasis Versicolor*).—*Characteristics*.—The disease begins as fawn-colored macules covered with furfuraceous scales on the chest and back

(sometimes also on the shoulders, neck, and upper arms), at first discrete, but soon coalescing. The lesions are about 4 to 5 mm. in diameter.

Chief Signs.—Presence of spores arranged like bunches of grapes and the mycelium of *Microsporon furfur* in the scrapings.

German Measles (*Rötheln; Rubella*).—*Characteristics.*—Discrete numerous rose-pink spots appear, first on the face, or face, trunk, and arms simultaneously, spreading to the lower extremities in twenty-four hours. On the trunk and limbs these macules often coalesce rapidly.

Chief Signs.—See page 767.

Less Common Causes.—Typhus; mycosis fungoides; leprosy; glanders; erythrasma; dermatitis herpetiformis; rat-bite fever; lupus vulgaris erythematoides; lupus erythematosus (center of the lesion is a patch which is often depressed); acne rosacea; paratyphoid fever; trench fever.

PAPULES

Papules are circumscribed elevations of the skin, of various sizes and shapes, and which are not over one centimeter in diameter.

Syphilis.—*Characteristics.*—Papules may occur as a secondary eruption in association with macules or independently. Miliary or follicular papular syphilids are rough to the touch and feel like small shot, varying in size from a pin-head upward, acuminate or rounded. The sites of election are the trunk, back, shoulders, and loins. The color is that of raw ham. The lesions frequently appear in groups which run into each other; they are sometimes disposed in rings. Flat or lenticular papular syphilids, a second variety, vary in size from a pin-head to a bean, and the small or large lesions predominate in a given case. They are perfectly round, with a flattened top, are but slightly elevated, and of a brownish-red color. They affect the whole body with but little tendency to agmination; sometimes they form a circlet around the brow at the hair margin (*corona veneris*). In some cases ring-like patches (the circinate or annular syphiloderm) appear on the chin, around the lips or nostrils, or sometimes on the vulva; they are made up of small yellowish-red papules with fine scales. Papulosquamous syphiloderms occur on the palms and soles, often mixed with maculopapular and papulotubercular lesions; they have dirty gray scales but are the color of raw ham beneath.

Chief Signs.—See page 770.

Varicella (*Chickenpox*).—*Characteristics.*—The eruption begins as rose-colored papules changing in a few hours into vesicles the size of a match-head.

Chief Signs.—See page 775.

Variola (*Smallpox*).—*Characteristics.*—The papular stage follows the macular in a few hours (fourth day). The papules feel like shot in the skin and become vesicular on the fifth or sixth day.

Chief Signs.—See page 770.

Measles (*Morbilli; Rubeola*).—*Characteristics.*—The lesions may be slightly elevated and papular, though usually they are macular.

Chief Signs.—See page 770.

Acne Vulgaris.—*Characteristics.*—The primary lesion is invariably a comedo. The next stage is a semiglobular or more rarely acuminate papule surrounding the

blackhead, usually intensely red, deep-seated or superficial, and may be painful on pressure. Pus forms in twenty-four to forty-eight hours and the papules change to pustules.

Chief Signs.—See page 779.

Acne Rosacea.—*Characteristics.*—Acneform lesions coexist with erythema and telangiectases of the face and nose. The papules are commonly large and disfiguring.

Chief Signs.—See page 170.

Papular Eczema.—*Characteristics.*—This type may start with very small papules chiefly seated around the hair follicles, or the papules may be larger, 2 to 4 mm. in diameter. At first they are well-defined and discrete, but usually they soon coalesce, and then the papules cannot be distinguished except perhaps around the edges. Some of the papules may be surmounted by minute vesicles. The papules are red and there is erythema of the neighboring skin.

Chief Signs.—Usual location on the arms, axilla, legs, or back; usually considerable scaling; intense itching; resistance to treatment.

Miliaria (Prickly Heat).—*Characteristics.*—Numerous, minute, pointed papules, vesicles, or vesicopapules, or a combination of the three, are present on the trunk, and especially the chest. They are each surrounded by an areola of erythema.

Chief Signs.—Occurrence in summer; may be itching and burning; duration four days to a week.

Keratosis Pilaris.—*Characteristics.*—The lesions consist of closely aggregated, pinhead-sized, conical, papulosquamous prominences corresponding to the orifices of the hair follicles. They are grayish, whitish, or blackish, and are common on the extensor surface of the arms and thighs.

Chief Signs.—Absence of itching; chronicity.

Scabies (Itch).—*Characteristics.*—Small, intensely itching papules, vesicles, and pustules are present commonly on the hands, between the fingers, the wrists, axillæ, genitalia, beneath the mammæ, and on the inner aspects of the thighs. Among these lesions may be found burrows of the female acarus as discolored, dotted, slightly elevated lines.

Chief Signs.—History of contagion; itching; distribution; burrows; multiplicity of lesions.

Verruca Acuminata (Venereal Wart).—*Characteristics.*—Soft, reddish, highly vascular, dry or moist, sessile or pedunculated new growths occur in groups about the genitalia associated with an irritating discharge therefrom.

Benign Fibro-Epithelioma (Papilloma, Non-Pigmented Mole).—*Characteristics.*—A semiglobular growth is present usually upon the face, from one-sixteenth to one-half inch in diameter, from which a bunch of hair may protrude. It is clearly attached to the skin and not to the deeper structures. Another type is pedunculated and filiform, while a third is large and convoluted and attached by a slender pedicle.

Chief Signs.—Presence from birth.

Milium.—*Characteristics.*—A small concretion is situated at the mouth of a follicle and covered by a very thin layer of epidermis. These little lesions are

commonly situated about the eyelids and adjacent skin and upon the genitalia.

Verruca (*Common Wart*).—*Characteristics*.—A firm circumscribed elevation, varying in size from a millet-seed to a pea occurs generally on the hands and fingers.

Urticaria Papulosa (*Lichen Urticatus*).—*Characteristics*.—Discrete scattered papules, most common upon the arms, are seen, from which the tops have usually been scratched due to the itching. They are pink or rose-colored. The eruption may last for several months, coming out in crops.

Chief Signs.—Occurrence in children; dermatographism; presence of scattered wheals (may begin as wheals).

Lichen Planus.—*Characteristics*.—Purplish, angular papules, 1 to 5 mm. in diameter, many arranged in rows, are present chiefly on the extensor surfaces of the legs and flexor surfaces of the arm and to a less extent upon the trunk. Papules are often found upon the buccal mucous membrane; and male genitalia.

Chief Signs.—Sudden appearance; intense itching; duration a month or two.

Typhoid Fever.—*Characteristics*.—Small, slightly elevated, rose-colored spots that disappear on pressure often appear in successive crops on the seventh to the tenth day of the disease, most abundant upon the abdomen, but often also on the chest and back.

Chief Signs.—See page 701.

Drug Rash.—*Characteristics*.—Cubebs, copaiba, bromids, iodids, arsenic, anti-pyrin may cause at times a rash of papular or mixed lesions.

Chief Signs.—History of use; disappearance after withdrawal of the drug.

Lupus Erythematosus.—*Characteristics*.—Chronic reddish, slightly elevated patches occur usually upon the cheeks, nose, ears, or scalp, roughly symmetrical and few in number. They are scaly and spread peripherally, leaving scar tissue behind. The periphery of the patch is elevated, the center depressed and atrophied. Frequently a butterfly-shaped patch is seen involving the bridge of the nose and adjacent parts of both cheeks. Rarely the lesions are widely disseminated.

Chief Signs.—Occurrence in adults; chronicity; absence of subjective symptoms; no tendency to ulceration; may be dilatation of the sebaceous glands.

Erythema Multiforme (*Papular Variety*).—*Characteristics*.—Papules varying in size from one-quarter to three-quarters of an inch, some round, the rest irregular in shape, sharply circumscribed, varying in color from pale pink to bright red, appear, usually confined to the backs of the hands and forearms, but the legs and face may also be affected. This constitutes the commonest type of the disease.

Chief Signs.—See page 636.

Less Common Causes.—Anthrax (first stage); antitoxin injection; lichen scrofulosorum; phthiriasis; pityriasis rubra; prurigo; psittacosis; rat-bite fever; influenza; obstructive jaundice; sycosis vulgaris (early papular); German measles (sometimes maculopapular); herpes zoster (abortive type); papulonecrotic tubercles; psoriasis (in the beginning); carcinoma lenticulare; acne varioliformis; lupus vulgaris; porokeratosis; acnitis; keratosis follicularis; glanders; colloid milium; crow-crow.

VESICLES

(Little Blisters)

Vesicles are pinpoint to small pea-sized, whitish, yellowish, or reddish, circumscribed epidermal elevations containing clear opaque fluid. Certain drugs when locally applied may cause vesiculation (dermatitis venenata due to balsam of Peru, cantharides, iodine, mustard, hydrogen peroxide, turpentine). Bites or stings are easily recognized from the history and central punctum when vesiculation is present. Such accidental causes as frost-bite or pressure are readily diagnosed.

Herpes Simplex (*Fever-Blisters*).—*Characteristics*.—A small clump of vesicles appears upon the face, lips, or mucous membranes of the mouth or genitalia, mounted upon an inflammatory base. Soon their contents become puriform, dry up, and form reddish-brown crusts that fall off in a few days. Burning and tingling precede and accompany the eruption.

Chief Signs.—Acute onset; absence of glandular involvement; duration, a few days.

Herpes Zoster (*Shingles*).—*Characteristics*.—Clusters of vesicles on an inflammatory base may appear on any part of the body, but are most frequently observed along the course of the intercostal nerves. Only one side, as a rule, is affected. The fluid in the vesicles soon becomes turbid, dries up, and forms yellow-brown crusts which fall off in a few days. Sharp neuralgic pain accompanies and precedes the eruption.

Chief Signs.—Acute onset; fever and malaise; glandular involvement.

Poison-Ivy (*Rhus poisoning*).—*Characteristics*.—Numerous vesicles, about pinhead size, begin to appear in about twenty-four hours on the exposed surfaces (backs of the hands and forearms, face, penis), after an initial erythema. These vesicles may coalesce to form larger vesicles; they usually rupture in two to four days, leaving a raw surface. Intense burning with some itching is complained of, often associated with a feeling of great tension.

Chief Signs.—History of exposure; history of previous attacks.

Sudamina.—*Characteristics*.—Minute, irregular, translucent vesicles appear most frequently and abundantly on the trunk, especially the front. They are not surrounded by inflammatory areolæ and do not rupture, but dry up and are followed by slight desquamation. There are no subjective symptoms.

Chief Signs.—Occurrence in persons who perspire freely or are debilitated by a febrile disease with sweating; absence of signs of inflammation.

Miliaria (*Prickly Heat*).—*Characteristics*.—Numerous, closely crowded, minute vesicles or papules, vesiculopapules, or a combination of all three appear on the trunk. The vesicles are acuminate in shape and do not tend to spontaneous rupture.

Chief Signs.—See page 772.

Eczema (*Vesicular Type*).—*Characteristics*.—Small vesicles develop on an erythematous patch, become confluent, rupture, and are then covered with yellowish crusts and scabs. Itching is usually severe. The condition may develop on any part of the body, but is most common on the scalp of infants, face of infants, and around the ears or on the hands of children and adults.

Chief Signs.—See page 731.

Impetigo Contagiosa.—*Characteristics.*—The primary lesion is a small vesicle containing clear fluid with very thin walls and without an inflammatory areola. In a short time the contents become purulent and the vesicle ruptures and leaves a red moist surface from which serum is excreted. Soon a yellowish or brownish crust forms ("stuck-on crust"). The lesions are apt to predominate around the chin and mouth.

Tinea Circinata (*Ringworm of the Body*).—*Characteristics.*—In many cases small transitory, superficial vesicles are observed about the more active advancing margin and contain the trichophyton organisms in greatest abundance. The face, neck, hands and feet are the most frequent sites.

Chief Signs.—See page 778.

Varicella (*Chickenpox*).—*Characteristics.*—The primary rose-colored papules change in a few hours to vesicles, the size of a match-head, containing clear serum. They are firm, superficial, and discrete, and appear first on the trunk and mouth, then the scalp, and less numerous on the face and limbs. Pustules form in forty-eight hours, later shrivel and form crusts. On successive days successive crops appear, all stages being present at once.

Chief Signs.—Incubation thirteen to seventeen days; acute onset; fever 99°–101° F., not falling with the rash; mild constitutional symptoms; duration one month.

Variola (*Smallpox*).—*Characteristics.*—Vesicles appear on the fifth or sixth day; they have clear summits, are umbilicated, and have a diameter of one-fifth inch. On the eighth day they become pustules.

Chief Signs.—See page 770.

Lobar Pneumonia.—*Characteristics.*—Herpes is perhaps more common in this than in any other fever (at least 25 per cent). It occurs around the nose and mouth. The prognosis is considered favorable when it is present.

Chief Signs.—See page 412.

Cerebrospinal Meningitis (*Cerebrospinal Fever*).—*Characteristics.*—Herpes labialis (see herpes simplex) occurs in 25 to 50 per cent. The onset is never before the fourth or fifth day of the disease.

Chief Signs.—See page 753.

Malaria.—*Characteristics.*—Herpes labialis is common in the remittent types.

Chief Signs.—See page 525.

Scabies (*Itch*).—*Characteristics.*—Small vesicles, papules, and pustules are present in characteristic sites. Burrows may be seen.

Chief Signs.—See page 772.

Dermatitis Herpetiformis.—*Characteristics.*—The vesicular variety is the most common form, or if other types of lesions are present (erythema, bullæ, papules, pustules), vesicles usually predominate. Successive crops of groups of distended translucent vesicles appear, usually symmetrically on various parts of the body, especially on the extensor surfaces about the elbows, the sacral region, the knees, and the trochanteric and scapular regions. The vesicles are often without inflammatory areolæ, and tend to coalesce but not to rupture.

Chief Signs.—May be constitutional symptoms; intense itching and burning; chronic course with remissions; pigmentation.

Syngomyelia (*Spinal Gliosis*).—*Characteristics*.—A vesicular eruption in certain nerve areas, lasting for a few days, without pain or irritation, and often confined to the analgesic zones, is not uncommon.

Chief Signs.—See page 317.

Less Common Causes.—Anthrax; dermatitis repens; erythema multiforme (vesicular type); foot-and-mouth disease; glanders; lichen urticatus; lymphangioma circumscriptum; pompholyx or cheiropompholyx (limited to the palms and soles); hydroa æstivale; Raynaud's disease; hydrocystoma; pemphigus; pemphigus neonatorum; dermatitis medicamentosa; acrodermatitis perstans; acne varioliformis; dracunculosis; grain itch; craw-craw.

BULLÆ

(*Large Blisters; Blebs*)

Blebs are rounded or irregularly shaped, tense, or flaccid pea- to egg-sized or larger, epidermic elevations, with serous or seropurulent contents; they are, in brief, similar to vesicles except as to dimensions. Certain obvious causes may produce blistering, such as burns, friction, gangrene, frost-bite, edema, vesicating agents.

Erysipelas.—*Characteristics*.—The superficial layers of the epidermis may be lifted as small blebs, most commonly on the eyelids, ears, and forehead.

Chief Signs.—See page 768.

Pemphigus.—*Characteristics*.—Blebs of varying sizes arise more or less continuously from apparently normal skin. All portions may be affected including the mucous membranes. The walls are thin, do not tend to rupture early, and contain serum. The walls are usually tense, the contents clear, but later may contain many polymorphonuclears. There is no inflammatory areola at the onset.

Chief Signs.—Mild constitutional symptoms; chronicity (but may be acute) with recurrences; non-inoculability of the serum.

Hereditary Syphilis (*Syphilitic Pemphigus*).—*Characteristics*.—Bullæ may occur soon after birth on any part of the body, but most frequently on the soles and palms. They are at first small, then may coalesce and form large blebs. They contain a turbid fluid, arise from a non-inflammatory base, and do not rupture for some little time.

Chief Signs.—See page 230.

Impetigo Contagiosa.—*Characteristics*.—The lesions are occasionally frankly bullous (bullous impetigo). These often become pustular, dry up, and crust over. The contents are inoculable.

Chief Signs.—See page 775.

Pemphigus Neonatorum.—*Characteristics*.—Bullæ appear, at first scattered, and then increase in size and number and rupture at an early date. The entire skin surface may become involved and then there is considerable peeling. The bullæ are especially frequent on the face, hands, and other exposed parts. The base of the blebs is a moist, bright-red surface.

Less Common Causes.—Dermatitis herpetiformis; pompholyx (limited to the hands and feet); epidermolysis bullosa; erythema multiforme bullosum (or vesiculolum); erythema iris; glanders; hydroa gestationis; leprosy; bromism; iodism;

Raynaud's disease; cerebrospinal fever; scurvy; syringomyelia; urticaria bullosa; rhus toxicodendron, primula obconica, satin-wood poisoning; trade eruption (turpentine, chrysarobin, varnish, anilin dyes, tar, resin, volatile oils); acetanilid or veronal poisoning (toward the end); pemphigus foliaceus; dermatitis factitia.

SCALES

The squam, or scale, one of the secondary cutaneous lesions, is a dry, and, as a rule, laminated, exfoliation of the epidermis. Scaling occurs in most forms of erythema (*q.v.*). Peeling commonly follows sunburn.

Scarlet Fever (*Scarlatina*).—*Characteristics*.—As the rash subsides, a flaky desquamation begins (sixth to eighth day), which is most marked in the second week and usually complete in four weeks except for the soles, though it may take many weeks. The peeling commences on the neck and follows the order of the rash. On the face it begins at numerous foci and separates as powder, on the abdomen as scales, on the soles as large flakes.

Chief Signs.—See page 766.

Measles (*Morbilli, Rubeola*).—*Characteristics*.—A fine brawny desquamation follows the fading of the rash, lasting up to ten days.

Chief Signs.—See page 770.

Pityriasis Simplex Capitis (*Dandruff; Seborrhea Sicca*).—*Characteristics*.—The hair and scalp are covered with dry scales which can easily be brushed off. There may be itching.

Pityriasis Versicolor (*Tinea Versicolor*).—*Characteristics*.—The disease begins as fawn-colored macules covered with furfuraceous scales, which, at first discrete, may coalesce to form large areas. The typical lesions are 4 to 5 mm. in diameter. The chest and back are chiefly affected.

Chief Signs.—Finding of spores and mycelia of the microsporon furfur.

Pityriasis Rosea.—*Characteristics*.—The essential lesions are patches or circles, very slightly raised, and thinly covered with small scales.

Chief Signs.—See page 770.

Pityriasis Steatoides (*Seborrhea Oleosa*).—*Characteristics*.—The scalp is almost entirely covered with yellowish, greasy scales, worse in some places than others. The scales adhere to some extent to the hair and scalp. There may be crusts in places. The hairs are greasy, and there is nearly always mild alopecia.

Psoriasis.—*Characteristics*.—The disease begins as a papular eruption, dry and scaly. The lesions are at first small but increase in size rapidly, forming large plaques. They occur mainly on the extensor surfaces of the limbs, especially the elbows and knees, the scalp, and to a lesser extent on the trunk. The spots are covered thickly with imbricated, glistening, whitish scales, which when removed leave a dry, smooth, shining, hyperemic surface with minute bleeding points. The lesions are sharply defined, from one-sixteenth inch to many inches in diameter.

Chief Signs.—Chronicity; absence of itching; predilection for the extensor surfaces and scalp; improvement in summer.

Squamous Eczema.—*Characteristics*.—The scales are usually associated with papules, the underlying skin is red and thickened, and there is often intense itching. This form is more common upon the hands, arms, feet and legs.

Chief Signs.—See page 772.

Tinea Tonsurans (*Ringworm of the Scalp*).—*Characteristics.*—One or more rounded, scaly, elevated, grayish-colored patches are present on the scalp, through which project dry, brittle, lusterless, broken-off hairs.

Chief Signs.—Occurrence in children; spontaneous termination at puberty; chronicity; presence of the Microsporon or Trichophyton in the scrapings.

Tinea Circinata (*Ringworm of the Body*).—*Characteristics.*—The small, red, slightly raised spot which is the initial lesion gradually spreads at the edge and becomes scaly. It fades away at the center as the circle enlarges, leaving a slightly discolored branny area which forms the inside of a red ring. In other cases the lesions appear as patches rather than as rings. There may be several areas affected.

Chief Signs.—May be considerable itching and some inflammation; presence of the Trichophyton or Microsporon in the scrapings.

Tinea Sycosis (*Ringworm of the Bearded Region; Tinea Barbæ; Sycosis Parasitica*).—*Characteristics.*—The superficial variety begins as one or more rounded, slightly scaly, hyperemic patches in the bearded region of men, the areas enlarging and clearing up somewhat centrally, the border being usually quite distinctly elevated. Several nearby patches may coalesce and give rise to a large, irregular area. The hairs are readily extracted. Deep-seated nodules may develop (kerion).

Chief Signs.—Presence of the ringworm fungus in the scrapings.

Syphilis.—*Characteristics.*—When lenticular syphilitic papular eruptions become annular they may become covered by thick whitish scales. The pure squamous variety of syphiloderm is rare. The discoid lesions are also prone to be scaly.

Chief Signs.—See page 770.

Seborrheic Dermatitis.—*Characteristics.*—On the body and scalp are itchy, circumscribed inflammatory patches which may be covered by crusts or white scales. The lesions are erythematous or papular, and may be circinate. Widely different forms are assumed in different individuals.

Chief Signs.—See page 783.

Dermatitis Exfoliativa (*Pityriasis Rubra*).—*Characteristics.*—The skin peels in either large or small scales, usually of a dirty gray color, after a short period (several days to a week) of a generalized erythematous dermatitis.

Chief Signs.—See page 767.

Lupus Erythematosus.—*Characteristics.*—The chronic, circumscribed, slightly elevated, reddish patches occurring upon the cheeks, nose, ears, or scalp are more or less covered with yellowish-gray, adherent scales.

Chief Signs.—See page 773.

Ichthyosis.—*Characteristics.*—The character of the scaling depends upon the severity and extent of the disease. The mildest form (xeroderma) has only bran-like scaling with harsh, dry skin on the extensor surface of the limbs. The more pronounced cases may involve the body and limbs and to a less degree the face, and the skin is dry and rough and covered with thin, fishlike scales. There may be considerable shedding, and fissures around the joints. In very severe cases the surface consists of heavy, horny plates and is divided by deep fissures; the scales are of a dark, dirty color.

Chief Signs.—Congenital, or appearance in early life; chronicity; lack of inflammatory phenomena and subjective symptoms.

Erythema Scarlatiniforme.—*Characteristics.*—A slight amount of furfuraceous scaling occurs almost from the onset, which becomes more profuse and by the end of a week or ten days develops into a more or less profuse peeling.

Chief Signs.—See page 768.

Less Common Causes.—*Tinea barbæ* (barber's itch); dengue; dermatitis exfoliativa neonatorum; desquamatio periodica; gout; herpes; pellagra; pemphigus foliaceus; Rôtheln; scurvy; keratosis pilaris (xeroderma); erythrasma; erysipelas; local use of carbolic acid, iodine, etc.; internal use of quinine, belladonna, antipyrine, copaiba, etc.; pityriasis rubra pilaris; pityriasis rubra (hebra); parapsoriasis; mycosis fungoides (premycotic stage); parakeratosis variegata; lichen scrofulosorum; pinta.

PUSTULES

Pustules are discrete lesions in which the upper portion of the skin is elevated by a purulent exudate. They are either rounded or acuminate and may be superficially or deeply seated. They frequently develop from either papules or vesicles. The hair follicle is often the seat of origin.

Impetigo Contagiosa.—*Characteristics.*—In a short time the contents of the primary vesicle become milky or frankly purulent. Soon these rupture and a yellowish or brownish crust forms on the surface ("stuck-on" crust).

Chief Signs.—See page 775.

Pustular Eczema.—*Characteristics.*—Small pustules aggregated in a patch are present, usually upon the face, scalp, or ears, often in poorly nourished children. They are generally associated with minute vesicles; the intervening skin is red and thickened; and there is marked burning and itching.

Chief Signs.—See page 772.

Variola (Smallpox).—*Characteristics.*—About the eighth day the vesicles change into pustules which now lose their umbilication. There is swelling and redness about the pustules. The secondary fever develops. The pustules rapidly dry, forming scabs which drop off by the fourteenth or fifteenth day, leaving dark scars or pits.

Chief Signs.—See page 770.

Furunculosis (Boils).—*Characteristics.*—Areas of deep induration and tenderness appear, become localized, and form a definite red, tender, hot mass, which by the fifth day fluctuates and later ruptures.

Chief Signs.—Occurrence upon areas subjected to friction (see also Boils, page 787).

Acne Vulgaris.—*Characteristics.*—Pustules superficially or deeply seated develop from papules in twenty-four to forty-eight hours, usually confined to the face, back, and shoulders. They contain thick white pus and usually rupture spontaneously. They are usually associated with papules and comedones and excite no itching.

Chief Signs.—Onset usually at puberty; chronicity; involvement of sebaceous glands.

Varicella (Chickenpox).—*Characteristics.*—Pustules form from the first crop in forty-eight hours and later shrivel and form crusts. On subsequent days, usually

three in all, successive crops develop, so that all stages of the eruption are simultaneously present, even among those of similar date.

Chief Signs.—See page 775.

Syphilis.—*Characteristics.*—Pustular syphilids occur in two forms, the acuminate and the flat, each form being small or large. The small acuminate or miliary type begins as a papule and dries, forming crusts. The large acuminate pustules may or may not begin as papules, may be superficial or deep, and affect all portions of the body, but are more common on the thighs. The small, flat pustular syphilids may begin as such or develop from macules or papules. They are discrete, generalized, with a preference for the genitals, scalp, or face. Crusts quickly form. The large, flat pustular syphilids differ from these only in size. Pustular syphilids are much less frequent than papular.

Chief Signs.—See page 770.

Sycosis Vulgaris (*Sycosis Non-parasitica; Simple Sycosis*).—*Characteristics.*—Small pustules develop from conical reddish papules in the bearded area of men. Each is pierced by a hair which becomes lusterless. The pustules show but little tendency to rupture. There may be considerable crusting. The lesions are at first discrete but may become confluent and cause infiltration; the disease is, however, relatively superficial, and there is but little tendency for the hairs to fall out.

Drug Eruptions.—*Characteristics.*—Bromids, iodids, arsenic, copaiba, and occasionally other drugs may cause pustular or acnelike eruptions.

Chief Signs.—History of use of drugs; disappearance after withdrawal.

Ecthyma.—*Characteristics.*—A few deep-seated pustules surrounded by inflammatory areolæ and indurated skin occur, most commonly upon the legs, sometimes upon the shoulders, abdomen, or upper arms. They may be a centimeter in diameter, and in five or six days they rupture, forming a heavy brown crust, beneath which ulceration and suppuration proceed.

Chief Signs.—Acute course; absence of subjective phenomena.

Less Common Causes.—Glanders; anthrax; sporotrichosis; croton oil (locally); pustular scrofuloderm; acrodermatitis hiemalis; pyodermatitis vegetans; straw-itch; dermatitis herpetiformis; tinea sycosis; acne varioliformis; dermatitis papillaris capillitii; folliculitis; postmortem pustule; craw-craw.

NODULES OR TUBERCLES

Nodules are circumscribed, solid, rather deeply seated lesions of the skin over one centimeter in diameter. Nodules extend deeper than papules.

Warts (*Plain and Venereal*).—See under Papules, page 771.

Sebaceous Cyst (*Wen; Steatoma*).—*Characteristics.*—One or more rounded or oval elevations, varying in size from a pea to a large walnut, slowly appear on the scalp, face, or back. They are painless, rather soft, and when opened are found to contain a yellowish or white caseous mass.

Lupus Vulgaris.—*Characteristics.*—Small reddish-brown nodules, indurated and deeply seated, appear and spread peripherally, forming a patch of reddish color, composed of "apple jelly" nodules (seen under pressure with a glass slide). After a time the older tubercles break down and shallow, irregular ulceration

results, with soft red edges. The ulcers spread slowly and may heal as a scar in the center. The most common site is on the face near the nose and the hands.

Chief Signs.—Occurrence in childhood or early adult life; biopsy.

Syphilis.—*Characteristics.*—Nodular syphilids are usually tertiary lesions and are more localized than the early lesions. Agminate lesions are rounded or conical papules or nodules, at first discrete, but later running together to form a patch or raised nodule. They are most common on the face, limbs, and trunk. Circinate and serpiginous nodular syphilids are agminate nodules that extend peripherally to form round or serpentine patches which clear up in the center. They are most common on the limbs and body. Gummata of the skin occur from one to a dozen or more, beginning as deep-seated nodes, which in a few days undergo central necrosis with the formation of deep, punched-out ulcers.

Chief Signs.—See page 193.

Xanthoma Planum (*Xanthoma of the Eyelids*).—*Characteristics.*—This consists of smooth, circumscribed, slightly elevated, buff-colored or yellowish patches, occurring on the eyelids.

Acute Rheumatic Fever.—*Characteristics.*—Small subcutaneous nodules attached to the tendons and fascia occur, more common in children than in adults. They vary in size from a small shot to a large pea and are most numerous on the fingers, hands, and wrists, but may occur about the elbows, knees, vertebral spines, and scapulæ. They grow very rapidly and last for weeks or months. They usually indicate mitral endocarditis in children and are more common after the decline of the fever.

Chief Signs.—See page 736.

Tinea Sycosis (*Ringworm of the Bearded Region; Tinea Barbæ; Sycosis Parasitica*).—*Characteristics.*—In the deep-seated variety the affected parts assume a lumpy and nodular condition. The overlying skin is usually considerably reddened and studded with few or numerous follicular pustules. The nodules tend to soften and discharge at one or more of the follicular openings a glutinous material which may dry to thick, adherent crusts. The hairs usually fall out.

Chief Signs.—Presence of the ringworm fungus in the scrapings.

Erythema Nodosum.—*Characteristics.*—Bright red nodes varying in size from a pea to an egg suddenly appear, usually upon the tibial aspects of the legs. They may appear to fluctuate, but are not very painful and never suppurate. They gradually turn yellow, blue, and green like a bruise.

Chief Signs.—Occurrence usually in young females; acute onset with constitutional symptoms and joint pains; duration rarely more than a month.

Erythema Induratum.—*Characteristics.*—Several subcutaneous nodules appear insidiously on the outer or posterior aspects of the lower leg and gradually enlarge to from one-half to one and one-half inches in diameter. The skin above becomes purplish and soon firmly attached to the nodules. They may be absorbed or break down into deep, irregular ulcers.

Chief Signs.—Occurrence in young women who stand to any great extent; chronicity; absence of signs of syphilis.

Fibroma.—*Characteristics.*—One or many soft or firm, sessile or pedunculated tumors, varying in size from a pea to a cherry or larger, are present in the corium and subcutaneous tissue. They are painless.

Less Common Causes.—Leprosy; molluscum contagiosum; neurofibromatosis; adenoma sebaceum; acne keloid; dermoid cyst; sarcoid; bromism; elephantiasis; sporotrichosis; sycosis vulgaris; psorospermiasis; tuberculosis verrucosa cutis; multiple cysticerci; keratosis follicularis; lymphadenoma; yaws; xanthoma tuberosum; subcutaneous nodules of migraine, gout, and arthritis deformans; melanotic carcinoma; carcinoma tuberosum; leukemia; urticaria pigmentosa; acnitis; angio-keratoma; prurigo nodularis; mycetoma; prosector's wart; papillary epithelioma; neuroma; myoma; lymphangioma; rhinoscleroma; keloid.

CRUSTS AND SCABS

The scab, or crust, one of the secondary cutaneous lesions, is a more or less irregular, dried-up mass of exudation on the surface of the skin.

Eczema.—*Characteristics.*—Either crusts or scales are formed sooner or later in every case of eczema. In the vesicular type of eczema the vesicles become confluent and rupture, and the surface is covered by a dry mass of yellowish crusts. Eczema pustulosum may also have similar crusts.

Chief Signs.—See page 731.

Impetigo Contagiosa.—*Characteristics.*—The vesiculopustular lesions dry up in a few days and form thin, yellow, lamellated crusts, that, separating, leave a slightly excoriated surface.

Chief Signs.—See page 775.

Varicella (Chickenpox).—*Characteristics.*—In two or three days the vesicles begin to desiccate, become irregularly puckered at the periphery, and present a depressed, thin, friable, blackish crust in the center.

Chief Signs.—See page 775.

Variola (Smallpox).—*Characteristics.*—The pustules of smallpox dry up or break in three or four days, forming reddish-brown crusts, which emit a sickening odor and excite intense itching. In the course of two or three weeks the crusts or scabs separate and may leave permanent pits or pock-marks.

Chief Signs.—See page 770.

Herpes Simplex and Zoster.—*Characteristics.*—The vesicles become puriform in a few days, dry up, and form reddish- or yellow-brown crusts that fall off in a few days.

Chief Signs.—See page 774.

Syphilis.—*Characteristics.*—The pustular or ecthymoid secondary form of eruption dries up, forming yellowish-brown crusts. When the crusts form in layers, making a pyramid and resembling an oyster-shell, they are spoken of as rupia. When the crusts are removed a rather deep, punched-out ulcer is seen. Nodular and bullous syphiloderms, later forms, also develop crusts; the latter are dark, stratified, conic crusts, under which are ulcers pouring forth a thick, purulent fluid.

Chief Signs.—See page 192.

Sycosis Vulgaris (Barber's Itch).—*Characteristics.*—At times there is considerable crusting, especially in chronic cases.

Chief Signs.—See page 780.

Rodent Ulcer (Basal-Celled Cancer).—*Characteristics.*—The little nodule,

which is the beginning of the cancer, undergoes surface excoriation and soon crusts over, and from which the scab sometimes drops, disclosing an area that looks like granulation tissue and that bleeds easily on trauma. The further course is a typical ulceration or fungus growth.

Chief Signs.—See page 785.

Epithelioma (*Prickle-Celled Cancer*).—*Characteristics.*—A scab covers the ulceration and from time to time falls off or is removed, after which it is noticed that the area of ulceration is a little larger.

Chief Signs.—See page 785.

Seborrheic Dermatitis.—*Characteristics.*—The disease usually begins upon the scalp in the form of small papules, which may be discrete or coalescent and are covered by soft, loosely adherent, yellow crusts, the skin beneath being markedly inflammatory. The adjacent skin of the face may be affected, and also the body and limbs.

Senile Keratosis.—*Characteristics.*—An oval yellowish patch, about one-third inch in diameter, containing a few punctate black spots appears, most commonly upon the face. It becomes darker and larger and very thin scales develop. The color becomes almost black and the scales form into crusts. Several patches may coalesce.

Chief Signs.—Senility.

Lupus Vulgaris.—*Characteristics.*—Shortly after ulceration begins a crust forms which may be of varying thickness.

Chief Signs.—See page 785.

Ecthyma.—*Characteristics.*—The flat yellow pustules appearing in crops, especially on the legs, and surrounded by distinct red areolæ soon dry up, forming reddish-brown crusts. Slight excoriation and pigmentation sometimes remain after the separation of the crusts.

Chief Signs.—See page 780.

Favus.—*Characteristics.*—Yellow, saucer-shaped crusts (concave side uppermost), having a peculiar musty odor, surround the bases of the hairs, which break off, split or fall, causing areas of baldness. The disease may affect the scalp, body or nails. At first the small crusts are discrete but later become confluent.

Chief Signs.—Occurrence in Italian and Russian immigrant children; chronicity; presence of mycelia and spores of *Achorion schænleinii*.

Less Common Causes.—Acne sebacea; leprosy; mycosis fungoides; pemphigus vulgaris; psoriasis rupoides; ringworms; thrombo-angiitis obliterans; yaws; tinea tonsurans (in neglected cases); scabies (in neglected cases); erythema multiforme; pityriasis steatoides (seborrhea oleosa); Paget's disease of the nipple; scrofuloderma; acne varioliformis.

WHEELS

(Hivelike Eruptions)

Wheals are edematous, more or less circumscribed, irregular, pinkish or whitish elevations of the skin that are transitory in character. When wheals are due to such local and accidental causes as the bites of insects or the contact of the stinging

nettle, the diagnosis is furnished by the history, and the insect bite by the central punctum.

Urticaria (*Hives; Nettlerash*).—*Characteristics*.—Slightly elevated, pinkish, circumscribed wheals, usually not over one cm. in diameter, appear, especially where the skin is irritated, last but a short time and then fade without leaving any trace. They begin by more or less violent itching and can be produced by scratching and rubbing. Linear wheals may be produced during an attack by drawing a blunt instrument firmly over the skin. The lesions are surrounded by a red areola. They may be localized or more or less general. Giant urticaria is a large circumscribed wheal, most common upon the lip. The wheals may become hemorrhagic and are then purple. A papular variety may occur.

Chief Signs.—History of an exciting factor (certain foods) as shellfish and strawberries, or evidence of vagatony, as asthma, hay-fever, etc.; evanescent character; intense itching; irregular and general distribution, especially on covered parts; may be constitutional symptoms; may be a mental complex.

Serum Rash (*Anaphylaxis*).—*Characteristics*.—Horse serum and various anti-toxins may produce an urticaria. This occurs usually in those who have had a previous serum injection more than ten days prior (may be many years); or it may occur after the first injection. Pure urticaria, more or less generalized, with maximum intensity around the site of inoculation, appears with intense itching; or there may be a generalized erythema, with multiple wheals among the erythema.

Chief Signs.—Onset seven to fourteen days after the injection or within a few hours after the second injection (anaphylaxis); may be rigor, dyspnea, cyanosis, vomiting, fever, joint pains, prostration or collapse; duration of rash only a few days.

Drug Rash.—*Characteristics*.—Certain drugs, as aspirin, quinin, veronal, anti-pyrin, and others may cause an urticaria.

Chief Signs.—History of use; disappearance after withdrawal.

Angioneurotic Edema (*Quincke's Disease*).—*Characteristics*.—Rather sharply circumscribed, acute areas of edema appear, usually in regions where the tissues are readily distensible, as the eyelid, ear lobe, lip, etc., also the hands, feet, and genitals. They disappear in a few hours.

Chief Signs.—History of preceding attacks, often at a different site; transient duration; may be gastro-enteric disturbances.

Less Common Causes.—Hydatids; cerebrospinal meningitis; dengue; dermatitis herpetiformis; peliosis rheumatica; polymyositis; tapeworm; urticaria pigmentosa; grain itch.

ULCERS

(See also "Ulcers of the Leg," page 634; and "Ulcers of the Foot," page 645; etc.)

Ulcers are rounded or irregularly shaped and sized losses of cutaneous tissues, sometimes extending into the subcutaneous structures, resulting from disease.

Chancre.—*Characteristics*.—The typical chancre begins as a papule, which loses its epithelial covering, becoming eroded. When subjected to irritation or maceration it ulcerates (hunterian or ulcerative chancre), then being oval or round with sloping edges. It is usually single and heals in three to four weeks.

Chief Signs.—See page 558.

Chancroid.—*Characteristics.*—It begins as a pustule or ulcer on the glans penis, or prepuce, and is frequently multiple and auto-inoculable. It is usually irregular in shape, punched-out, excavated, with a dirty, yellowish, uneven base and a copious purulent discharge. It is softer than a chancre and painful.

Chief Signs.—See page 558.

Simple Ulcer (Traumatic).—*Characteristics.*—The ulcer is usually acute and characterized by rapid progress and intense inflammation. Its character is usually dependent upon the etiology, which is obvious.

Chief Signs.—History of mechanical, chemical, or thermic trauma.

Tertiary Syphilis (Ulcerative Gummous Syphilid).—*Characteristics.*—The ulcers are round, have a punched-out appearance, the walls do not overhang, and they extend rapidly. They are painless. The base is fairly clean, but when secondary infection occurs there is an abundant fetid discharge. They may involve bone. They are most common upon the upper third and outer aspects of the legs.

Chief Signs.—See page 193.

Epithelioma (Prickle-Celled Cancer).—*Characteristics.*—The fully developed lesion is characteristic. It is irregular in shape with a surface which is irregular and more or less verrucose, resembling friable granulation tissue which bleeds easily. The edges are thickened and of a stony hardness. The secretion is scanty and bloody. There may be pain. As the ulcer develops it may be covered by a scab.

Chief Signs.—Occurrence in later life; sooner or later metastasis to the lymph glands, the nearest first; chronicity; biopsy.

Rodent Ulcer (Basal-Celled Cancer).—*Characteristics.*—The ulcer has a prominent indurated margin, an irregular outline with an uneven and glazed base, and exudes a sanious, viscid secretion. It begins as a papule which becomes scabby and later develops into an excoriation covered by a crust.

Chief Signs.—Occurrence in later life; development on a keratosis, scar, or papilloma; occurrence usually on the face; slow growth; absence of metastasis; biopsy.

Decubitus Ulcer.—*Characteristics.*—The ulcer begins as a small blister which is soon rubbed off, leaving a little sore. The ulcer spreads into the surrounding tissues, or a large slough forms.

For causes of Decubitus Ulcer, see page 553.

Simple Chronic Ulcer (Chronic Indolent Ulcer; Varicose Ulcer).—*Characteristics.*—It is most frequently seen on the lower third of the leg in the latter half of life. It is oval in shape, usually painless and may last for years. It has humped-up, hard, and congested edges, and a smooth, glistening, dirty yellow floor with a few feeble granulations.

Chief Signs.—See page 634.

Lupus Vulgaris.—*Characteristics.*—The ulcer is shallow, irregular, and overhung by the borders of the skin. Growth is always slow, taking from three to six months to reach an inch in diameter. At the borders the individual tubercles appear as "apple jelly" nodules under pressure of a glass slide. A crust soon forms and after a year or more the center of the lesion heals, ulceration advancing at the edges. There may be several centers of ulceration. Bones are never involved

and there is very little secretion. The most common site is the face near the nose.

Chief Signs.—Occurrence in early life; absence of signs of syphilis; biopsy.

Diabetes Mellitus.—*Characteristics.*—Perforating ulcer of the foot is an occasional complication of diabetes mellitus, but gangrene is more common.

Chief Signs.—See page 676.

Tabes Dorsalis (Locomotor Ataxia).—*Characteristics.*—Perforating ulcer of the foot is not uncommon, arising most frequently on the plantar surface at the base of the great or little toe.

Chief Signs.—See page 619.

Herpes Progenitalis.—*Characteristics.*—A superficial, irregular, painful, non-indurated ulceration is present on the genitals; it commences as a number of vesicles which run together to form the ulcer, the edges of which are made up of segments of circles. The discharge is purulent but not abundant, and vesicles which have not burst may be found.

Chief Signs.—Absence of a bubo; healing under local treatment; absence of the spirochete in the dark-field examination.

Ecthyma.—*Characteristics.*—A crust forms on the primary deep-seated vesicopustule, and beneath the crust a superficial ulcerative process proceeds, the elevation of the margin causing the shallow ulcer to appear deep. The lesions usually occur on the legs or buttocks.

Chief Signs.—See page 780.

Erythema Induratum.—*Characteristics.*—The deep-seated nodosities, occurring usually on both calves, gradually extend to the surface and undergo necrosis, producing ulceration, or after absorption, atrophy. The ulcers are irregular, ill-conditioned, with puriform contents, and tend to heal slowly, leaving scars.

Chief Signs.—See page 781.

Scrofuloderma.—*Characteristics.*—Tuberculous glands, usually about the face and neck, discharge through the skin, with ulcer formation about the sinuses. The ulcers are usually almond-shaped, with thin, violaceous, undermined edges, and an uneven base made up of pale, flabby granulations.

Chief Signs.—See page 293.

X-Ray Ulcer.—*Characteristics.*—If x-ray dermatitis goes beyond the stage of a third-degree burn there occurs necrosis of the corium and subcutaneous tissue, in some cases involving everything down to bone. There develops a hard, leathery, dark gray mass of mummified tissue which is closely adherent and persistent and surrounded by an inflamed border. It is associated with intense pain.

Chief Signs.—History of recent massive x-ray therapy or repeated small doses.

Less Common Causes.—Anthrax; eczema; glanders; scurvy; sarcoma; Jaquet's erythema; mycosis fungoides; sarcoma cutis; sarcoma (of subcutaneous tissues, breaking through the skin); carcinoma of the breast (late); lenticular carcinoma (recurrence in the neighborhood of scar following breast amputation); acute tuberculosis ulcer (at mucocutaneous junction from internal tuberculosis); chronic gout (ulcerating tophi or joints); pediculosis (multiple ulcers from scratching); Oriental sore (Delhi boil); sporotrichosis, mycosis fungoides, blastomycosis, actinomycosis (granulomata).

BOILS OR PHLEGMONS

A boil or furuncle is an acute inflammation of a limited portion of the skin and subcutaneous tissue around a hair follicle, or a sweat or sebaceous gland, commonly due to infection with the *Staphylococcus pyogenes aureus*. Certain constitutional conditions predispose especially to crops of boils (furunculosis). In general, the lowered resistance during the convalescent period of febrile diseases favors their occurrence. Patients with obstructive jaundice also seem more disposed to have them.

Diabetes Mellitus.—*Characteristics.*—Boils and carbuncles are extremely common.

Chief Signs.—See page 676.

Typhoid Fever.—*Characteristics.*—Boils and superficial abscesses constitute a common and troublesome sequel.

Chief Signs.—See page 701.

Variola (Smallpox).—*Characteristics.*—During convalescence boils are very frequent and may be severe.

Chief Signs.—See page 770.

Less Common Causes.—Chronic alcoholism; chronic arsenic poisoning; chronic nephritis; Hodgkin's disease; ulcerative colitis.

SKIN, PIGMENTATION OF

Pigmentation may be local or general, and may be due to local or constitutional causes. Negroes often have a bluish pigmentation of the gums and buccal mucosa. Negro blood in the ancestry often causes such buccal pigmentation in perfectly healthy persons. Freckles (lentigo) are so common as to deserve little mention. In cases of vitiligo (leukoderma) when extensive, the white areas may be mistaken for the normal color and the condition called chloasma; but in leukoderma the border of the area is concave, whereas in chloasma it is convex. Chromidrosis or colored sweat, may also be mistaken for pigmentation, but it may be washed off with ether or chloroform. Any chronic itching dermatosis causes pigmentation. Some of the conditions given below are not true pigmentations.

Chloasma.—*Characteristics.*—The skin has variously sized and shaped yellowish, brownish, or blackish patches. The discoloration may be diffuse. The face is the usual site.

Multiple Comedones.—*Characteristics.*—The face may seem to be pigmented and resemble argyria.

Chief Signs.—Presence of blackheads.

Addison's Disease.—*Characteristics.*—The skin is bronzed and this at first may be confined to the face and hands, but usually becomes general. It ranges from light yellow to a deep brown or black slate color and is more marked on exposed parts and parts normally more deeply pigmented (areolæ of the nipples, genitalia) and on parts exposed to pressure and irritation (waistband). The mucous membranes are also pigmented, usually of patchy distribution. The depth of pigmentation often varies from time to time. Occasionally there are, in addition to the general bronzing, deeply pigmented spots.

Chief Signs.—Insidious onset; attacks of nausea and vomiting and diarrhea; marked asthenia; may be anemia; Sergeant's white line; low blood-pressure; cardiac weakness.

Pellagra.—*Characteristics.*—The skin becomes a deep red color, some pigmentation remaining after the acute eruption, usually on exposed surfaces.

Chief Signs.—Diarrhea; dementia; erythema (backs of the hands, face, neck, and feet).

Tuberculous Peritonitis.—*Characteristics.*—Bronzing of the skin is an occasional symptom and may be especially marked on the abdomen.

Chief Signs.—Slow onset; abdominal tenderness; tympanites; ascites; fever; constipation; presence of a tuberculous focus elsewhere; guinea-pig inoculation.

Nevus (Birth-Mark).—*Characteristics.*—Occasionally the yellowish moles and the verrucose moles cover a large extent of the cutaneous surface. They may cover the lower part of the trunk and upper part of the thighs ("bathing trunk" nevi).

Chief Signs.—Presence from birth.

Varicose Veins.—*Characteristics.*—The skin in the neighborhood of the veins often becomes pigmented in places and there may be a large area so discolored.

Chief Signs.—Presence of the veins.

Vagabond's Discoloration.—*Characteristics.*—A deep bronzing of the skin may occur from irritation of lice and dirt.

Chief Signs.—History; elimination of other causes; finding of lice.

Pregnancy (Chloasma Uterinum).—*Characteristics.*—The face may show a brownish discoloration (masque des femmes enceintes). The trunk and limbs may be involved.

Chief Signs.—Amenorrhea; morning sickness; tingling of the nipples; enlargement of the breasts; enlarged uterus with softened cervix.

Argyria.—*Characteristics.*—The skin is a bluish-gray or slate color. It is general over the surface and mucous membranes but most marked on the face and hands.

Chief Signs.—History of prolonged administration of silver salts.

Diabetes Mellitus.—*Characteristics.*—Bronzing of the skin (diabète bronzé) occurs in certain cases (related to hemochromatosis).

Chief Signs.—Gradual onset; thirst; polyuria; voracious appetite; progressive emaciation; urinalysis (high specific gravity, glycosuria); hyperglycemia.

Hemochromatosis.—*Characteristics.*—The skin varies in color from a dark brown to a leaden or bluish-black.

Chief Signs.—Weakness; enlarged liver; diabetes.

Exophthalmic Goiter (Graves' Disease).—*Characteristics.*—A patchy or generalized pigmentation is not uncommon.

Chief Signs.—Exophthalmos; thyroid enlargement; tremors; tachycardia.

Tinea Versicolor (Pityriasis Versicolor).—*Characteristics.*—The yellowish-brown patches may coalesce and cover large portions of the body. The chest and back are chiefly affected, but the shoulders, neck, and upper arms may be involved.

Chief Signs.—History of appearance of small, fawn-colored macules which have coalesced; presence of some of the isolated patches; presence of furfuraceous

scales when the skin is dry; finding of the *Microsporon furfur* in the scrapings.

Arsenic Therapy.—*Characteristics.*—Intense pigmentation of the skin may occur from prolonged use of arsenic. An exfoliative dermatitis occurs in intensive salvarsan therapy.

Chief Signs.—History; depression and irritability; flushing and hyperemia of the skin; puffiness of the eyelids; may be redness or bleeding of the gums, or salivation; nausea, vomiting, diarrhea; may be peripheral neuritis.

Phenolphthalein Therapy.—*Characteristics.*—A dark bluish pigmentation of the external genitals may occur.

Chief Signs.—History of use.

Scleroderma.—*Characteristics.*—Areas of pigmentation may occur.

Chief Signs.—Brawny induration of the skin, which is glossy, dry, and smooth; vasomotor disturbances.

Acanthosis Nigricans.—*Characteristics.*—There is first an excess of pigment in the axillary and inguinal regions and perhaps beneath the breasts, as well as on some of the flexor surfaces. The pigment is a dirty yellow, grading up to various shades of a deep brown. At times it may be almost general. There may be some cutaneous hypertrophy of a papillary nature.

Chief Signs.—Chronicity; presence of abdominal malignancy in adult cases.

Hodgkin's Disease (*Lymphadenoma*).—*Characteristics.*—Bronzing with marked cachexia may occur.

Chief Signs.—Glandular enlargement; splenic enlargement; relapsing fever; anemia, otherwise negative blood picture; biopsy.

Ochronosis.—*Characteristics.*—The face, hands, and feet may have a deep melanotic pigmentation, best seen about the knuckles and tendons of the hands and feet. There may be symmetrical black patches on the sclerotics. Widespread pigmentation has been observed.

Chief Signs.—Alcaptonuria.

Melanotic Cancer.—*Characteristics.*—The skin may be deeply pigmented in rare cases. The metastatic growths appear first as widely disseminated moles which rapidly become larger. The pigmented areas are really cutaneous and subcutaneous nodules.

Chief Signs.—Middle age; cachexia; physical signs of a new growth; presence of a primary mole (may become enlarged).

Less Common Causes.—Pigmentary syphiloderm; urticaria pigmentosa; Kaposi's disease; pernicious anemia; malarial cachexia (yellowish-brown to black); constipation; overwork; chronic ulcer of the stomach; hypertrophic biliary cirrhosis; nodular leprosy; Mongolian idiocy; pancreatitis; neurofibromatosis; rheumatoid arthritis; xeroderma pigmentosum; Still's disease; scurvy; abdominal malignancy; Schamberg's dermatosis; acrodynia; Gaucher's disease.

SKIN, HEMORRHAGES INTO

Hemorrhage into the skin causes lesions of various sizes, spoken of as puncta or spots, vibices or lines, petechiæ or small patches, ecchymoses or bruises, purpuric or purplish spots. They cannot be made to disappear by pressure. The lesions gradually change color and disappear.

Flea-Bites, Pediculosis, etc.—*Characteristics.*—Numerous small hemorrhagic points may be present and simulate some more serious ailment. The hemorrhagic foci are more numerous on the parts covered by the clothes, particularly in regions where collars and other constrictions in the dress occur.

Chief Signs.—Generalized itching; scratch-marks, linear and most pronounced between the shoulders; may be pigmentation; finding of the parasites.

Trauma (*Blows, Sprains, Fractures*).—*Characteristics.*—Bruises, or ecchymoses, are very common, but the cause may not be clear unless a careful history is taken, as some normal persons bruise very easily.

Chief Signs.—History of injury (possibly epilepsy, malingering, or “hysteria,” as well as accident).

Varicose Veins.—*Characteristics.*—A purpuric discoloration of the skin is often seen around varicose veins of the legs, together with its resultant dark-brown pigmentation.

Chief Signs.—Presence of varicose veins.

Cerebrospinal Meningitis.—*Characteristics.*—Petechiæ and purple spots are common, though variable in different epidemics. The petechiæ may be numerous and cover the entire skin (spotted fever).

Chief Signs.—See page 753.

Variola (*Smallpox*).—*Characteristics.*—Hemorrhagic smallpox occurs in two forms, *purpura variolosa* and *variola pustulosa hemorrhagica*. In the former a diffuse hyperemic rash, particularly in the groins, develops on the evening of the second or third day, with small punctiform hemorrhages; the rash extends, becoming more distinctly hemorrhagic, and the spots increase in size. Ecchymoses appear on the conjunctivæ and there may be hemorrhages from the mucous membranes. The skin may have a uniformly purplish hue, and the victim may even look plum-colored. Death may occur before the papules appear. In the second form the hemorrhages do not appear until the vesicular or pustular stage. The first indication is hemorrhage into the areolæ of the pocks, and later the matured pustules fill with blood.

Chief Signs.—Occurrence in an epidemic (first form); typical course but more severe (second form), see page 770.

Measles (*Morbilli*).—*Characteristics.*—Hemorrhages occur into the skin and from the mucous membranes (malignant or black measles).

Chief Signs.—See page 770.

Typhus Fever.—*Characteristics.*—The eruption is a subcuticular mottling with distinct papular rose-spots which change to petechiæ (mulberry rash), on the abdomen, chest, and extremities.

Chief Signs.—Abrupt onset with chill, general pains, marked prostration, and fever; fever maximum in two to three days, remaining high until the end of the second week, falling by crisis; appearance of the rash on the fourth or fifth day; nervous symptoms usually marked (cerebral); leukocytosis.

Scarlet Fever (*Scarlatina*).—*Characteristics.*—Hemorrhages may occur into the skin with hematuria and epistaxis. In the erythematous rash scattered petechiæ appear, become more extensive, and may involve the whole skin surface.

Chief Signs.—See page 766.

Septicopyemia (*Especially Malignant Endocarditis and Pyorrhea Alveolaris*).—*Characteristics*.—Extensive purpura may occur.

Chief Signs.—See page 673.

Jaundice.—*Characteristics*.—Any kind of jaundice may produce purpura. Spontaneous hemorrhage into the skin is less common here than is hemorrhage from what otherwise would be trivial causes.

Chief Signs.—For causes of Jaundice, see page 732.

Scurvy (*Scorbutus*).—*Characteristics*.—Ecchymoses soon appear, first on the legs, then on the arms and trunk, and particularly into and about the hair follicles. They are petechial, but may become larger, and when subcutaneous may form distinct swellings. The slightest bruise or injury causes hemorrhage.

Chief Signs.—See page 199.

Lymphatic Leukemia.—*Characteristics*.—Hemorrhages occur early, usually into the skin. In children, particularly, extensive purpura may be the first symptom that anything is wrong.

Chief Signs.—See page 726.

Purpura Simplex.—*Characteristics*.—Spots appear in crops usually upon the legs.

Chief Signs.—Occurrence in children; mild constitutional disturbance (slight fever); slight joint pains; duration one to two weeks, occasionally longer; absence of tendency to recurrence; absence of sequelæ.

Purpura Hæmorrhagica (*Morbus Masulosus Werlhofi*).—*Characteristics*.—After a few days of weakness and debility purpuric spots appear on the skin and rapidly increase in number and size.

Chief Signs.—Occurrence usually in girls with poor health; abrupt onset with malaise; hemorrhages from the mucous membranes; joint pains; fever.

Purpura Rheumatica (*Peliosis Rheumatica; Schönlein's Disease*).—*Characteristics*.—Extensive purpura occurs in successive crops and may affect any part of the body, though it is commoner upon the lower limbs than elsewhere. Urticaria and erythema often coexist.

Chief Signs.—Occurrence mostly in young adult males; onset with sore-throat and fever (101°–103° F.); joint pains (usually many joints); duration, months; tendency to relapses.

Henoch's Purpura.—*Characteristics*.—A purpuric rash is present, and urticaria and erythema often coexist.

Chief Signs.—Occurrence in children; abdominal colic, often severe (may precede the rash); diarrhea, vomiting, or constipation; may be melena; may be joint pains and nephritis; tendency to relapses (ceasing by the time of puberty).

Less Common Causes.—Hemophilia (bleeding follows trauma though the injury may be trivial); infantile scurvy; rupture of a muscle; rupture of a vein; effect of drugs; ptomainism; snake-bite; general tuberculosis; dysentery; cholera; yellow fever; Weil's disease; plague; remittent fever; malaria (severe); diphtheria; typhoid fever; blackwater fever; Bright's disease; cirrhosis of the liver; alcoholic neuritis; adiposis dolorosa; Buhl's disease; cancer of the liver; chloroma; sarcomatosis; erythema multiforme; Kaposi's disease; tabes dorsalis; myelitis; myositis hemorrhagica; paroxysmal hemoglobinuria; pernicious anemia; phthiriasis; psitticism; acute yellow atrophy of the liver; splenic anemia; myeloid leukemia;

lymphadenoma; pseudoleukemia infantum; lymphosarcoma; leech-bite; thrombopenic purpura; aplastic anemia.

SKIN, WHITE PATCHES ON

Albinism.—*Characteristics.*—The skin is white because of lack of pigment. In some cases the whiteness may be partial (especially in the Negro).

Chief Signs.—Congenital history; thin, soft, light hair; red pupils; photophobia.

Cicatrices.—*Characteristics.*—An old scar tends to become snowy white.

Chief Signs.—History of loss of tissue by injury or disease.

Vitiligo (*Leukoderma*).—*Characteristics.*—There are milk-white patches surrounded by areas of increased pigmentation. The milk-white spots appear on the body and grow very slowly. Their borders usually reveal an increase of the normal pigment.

Chief Signs.—History of gradual development; frequency in the tropics and in the Negro.

Leprosy.—*Characteristics.*—Sooner or later milk-white patches (*lepro-alba*) may occur with areas of pigmentation or other trophic changes.

Chief Signs.—Incubation, a few weeks to a few years; prodromal symptoms (headache, malaise, irregular fever, joint pains); dusky red nodules, especially on the face or extensor surfaces of elbows, knees, and hands, breaking down and forming ulcers and cicatrices; or anesthetic areas, beginning with pain and hyperesthesia, followed by yellow macules which spread peripherally and eventually become anesthetic; finding of *lepra bacilli* in the nodules; chronicity.

Scleroderma.—*Characteristics.*—In some instances there may be a decrease in the pigmentation of the skin of the affected area.

Chief Signs.—Usual gradual development over months or years; rigid, indurated, hide-bound, dry, smooth condition of affected skin areas; lack of expression if the face is involved; feeling of stiffness; muscular atrophy; joint stiffness.

Morphea (*Addison's Keloid*).—*Characteristics.*—Ivorylike, sharply circumscribed patches appear upon the trunk, which are at first slightly hyperemic. The surfaces are smooth and resistant to touch. As the patch grows its center becomes pale and ivorylike, while the periphery remains hyperemic or becomes pigmented. (This disease is a localized scleroderma, see above.)

Syphilitic Leukoderma.—*Characteristics.*—Whitish macules develop upon the neck of women, surrounded by a pigmented area, varying from 1 to 4 cm. in diameter and not very well defined.

Chief Signs.—See page 770.

Facial Hemiatrophy.—*Characteristics.*—The skin over the cheek, chin, or forehead becomes white or whitish yellow.

Chief Signs.—Occurrence before puberty, rarely after thirty; greater frequency in females; falling out of the hair; gradual wasting of the skin and muscles on the affected side of the face.

Less Common Causes.—Keloid; Raynaud's disease; neuritis; syringomyelia.

SKIN, CRACKLING ON PRESSURE*(Subcutaneous Emphysema)*

Wound of the Lung.—*Characteristics.*—Gas may spread rapidly beneath the skin, may extend over the greater part of the trunk in a short time, and disappears in the course of a few days.

Chief Signs.—Recent trauma (broken rib, stab wound, bullet wound, tracheotomy).

Interstitial Emphysema.—*Characteristics.*—The air may make its way upward into the root of the neck and appear subcutaneously, producing a crackling protrusion.

Chief Signs.—Occurrence after violent coughing or strain; may be pleural friction sound.

Less Common Causes.—Wound of the mouth; wound of the larynx; wound or perforation of the esophagus, stomach, or intestine; fracture of the pelvis; extravasation of urine; gas phlegmon; gangrene of the skin; caisson disease; glanders; bronchopneumonia; phthisis; pneumothorax; sneezing or blowing of the nose (sudden and unilateral of the face).

SKIN, DRYNESS OF*(Anidrosis)*

The skin is normally drier in winter than in summer. Certain obvious causes may produce this condition, such as severe vomiting and diarrhea. In certain skin diseases dryness of the skin may be marked, as in ichthyosis, scleroderma, eczema, psoriasis, pityriasis rubra pilaris, anesthetic leprosy, prurigo. Febrile states are generally accompanied by a dry skin. Overstretching of the skin as in anasarca may lead to dryness. In senility the skin is dry and scaly.

Diabetes Mellitus.—*Characteristics.*—The skin is dry and harsh and sweating rarely occurs except when phthisis coexists.

Chief Signs.—See page 788.

Diabetes Insipidus.—*Characteristics.*—Perspiration is naturally slight and the skin is harsh.

Chief Signs.—See page 828.

Chronic Interstitial Nephritis.—*Characteristics.*—The skin is dry and pale and sweats are not common.

Chief Signs.—See page 832.

Atrophin or Belladonna Action.—*Characteristics.*—Dryness and flushing of the skin accompany the general diminution in the secretion of all the glands.

Chief Signs.—History of ingestion of an overdose of belladonna or atropin; nervous excitation, followed by depression; diminished gastric juice, sweat, tears, saliva; dilatation of the pupils; sedation of gastric and intestinal peristalsis; increase in the heart rate; may be pyrexia.

Cretinism.—*Characteristics.*—The skin is very dry.

Chief Signs.—See page 41.

Myxedema of Adults (*Gull's Disease*).—*Characteristics*.—Dryness and roughness of the skin are marked, with inelastic swelling (puffiness) which does not pit on pressure.

Chief Signs.—See page 697.

Scurvy (*Scorbutus*).—*Characteristics*.—The skin early becomes dry and rough.

Chief Signs.—See page 199.

Less Common Causes.—*Tabes dorsalis*; syringomyelia; cerebral tumor; paralysis of the cervical sympathetic (unilateral); chronic peritonitis; depressive psychosis; cirrhosis of the liver; adiposis dolorosa; rheumatic arthritis; trypanosomiasis; scleroderma; anorexia nervosa ("hysteria").

SKIN, THICKENING OR INDURATION OF

Induration of the skin accompanies all local inflammatory conditions, as cellulitis, abscess, boils, chronic ulcers. Scars and keloids are localized thickenings of the skin.

Lichenification (*Neurodermite*).—*Characteristics*.—This is a lichenified plaque upon the leg, neck, arm, or scrotum due to scratching. There is an oval or irregular patch of darkened and thickened skin, the surface being divided into more or less elevated, triangular, or irregular flat papular areas, presenting a mosaiclike appearance and covered by the lesions of scratching.

Myxedema.—*Characteristics*.—A generalized firm, inelastic non-pitting swelling of the skin is present.

Chief Signs.—See page 697.

Scurvy (*Adult Form*).—*Characteristics*.—A remarkable infiltration of the skin, subcutaneous tissues, and muscles ("scurvy sclerosis"), forming a brawny induration, may be noted, most often in the legs.

Chief Signs.—See page 199.

Acquired Lymphangiectasis.—*Characteristics*.—The skin and subcutaneous tissues in the area drained by the obstructed lymph vessels are greatly thickened (hard edema, lymphedema). There is no pitting on pressure, and the skin has a coarse, corrugated surface (lymphatic warts), or the lymph vessels have a tortuous outline like varicose veins.

Chief Signs.—Presence of lymph obstruction (tumor, scar); tuberculosis, neoplasm, or removal of a group of glands; periodic pains and redness in the affected area, with fever; may be lymphatic fistulæ from rupture of lymphatic warts; may be attacks of infection or erysipelas.

Paralysis Agitans (*Parkinson's Disease*).—*Characteristics*.—The skin, especially of the forehead, may be thickened.

Chief Signs.—See page 41.

Scleroderma.—*Characteristics*.—In the diffuse form a brawny induration gradually develops, and the skin becomes firm, hard, dry, glassy, and closely united to the subcutaneous tissues. It develops first in the extremities or in the face and may become universal.

Chief Signs.—See page 792.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics*.—Scleroderma, as described above, may be a complication of Graves' disease.

Chief Signs.—See page 288.

Less Common Causes.—Leprosy; phlebitis; rhinoscleroma; sclerema; morphea (localized, spotty); ichthyosis; lichen ruber; erysipelas; sclerodactylism; acute mammary carcinoma ("peau d'orange"); arsenic poisoning (palms and soles); thrombo-angiitis obliterans; congenital lymphangiectasis; elephantiasis (of filariasis); multiple neuritis (hands and feet).

SPASTICITY OR RIGIDITY, GENERAL

(See also "Opisthotonos," page 753.)

Paralysis Agitans (*Parkinson's Disease; Shaking Palsy*).—*Characteristics.*—The usual type is characterized by the early appearance of muscular rigidity which shows itself primarily in the expressionless face and the well-known attitude and gait. In most cases the first symptom is rigidity, to which tremor is added in the later stages.

Chief Signs.—See page 41.

Encephalitis Lethargica (*Parkinsonian Syndrome*).—*Characteristics.*—The character of the rigidity is similar to that found in paralysis agitans (see above).

Chief Signs.—See page 41.

Congenital Hydrocephalus.—*Characteristics.*—Paralysis and spasticity of the limbs, with muscular contractures, exaggeration of the deep reflexes, and extensor plantar responses are common.

Chief Signs.—See page 13.

Acquired Chronic Hydrocephalus.—*Characteristics.*—There is spasticity of varying degrees associated with increase of the deep reflexes, diminution of the superficial abdominal reflexes, and the extensor plantar response.

Chief Signs.—See page 708.

Serous Meningitis (*Idiopathic Internal Hydrocephalus*).—*Characteristics.*—Besides the convulsive phenomena, the motor system exhibits a progressive spasticity, which is bilateral and equal on the two sides, and associated with slight general weakness.

Chief Signs.—See page 708.

Progressive Lenticular Degeneration (*Wilson's Disease*).—*Characteristics.*—A constant feature of the disease is the rigidity or spasticity of the muscles. It is progressive in nature, and involves all the muscles of the body except those of the eyes. As the disease advances, the rigidity gives rise to contractures which eventually lead to permanent deformities.

Chief Signs.—See page 800.

SPEECH, DISTURBANCES OF

(See also "Hoarseness or Aphonia," page 261, and "Nasal Voice," page 751.)

Abnormalities of speech are numerous, varying from complete mutism to slight defects in articulation, and are dependent on disturbances, functional or organic, in some part of the complex mechanism which is responsible for the production of intelligible language.

The amount of investigation required for making a diagnosis in cases of speech

abnormality varies within wide limits. Great care is called for in examining cases of aphasia which result from disturbance in the function of the cerebral speech centers or their dependent paths of communication; while the defective articulation of a patient suffering from cleft-palate needs only a comparatively superficial examination in order to arrive at a correct diagnosis.

In the first place, abnormality of speech may be due simply to mental defects. For example, the power of speech may be delayed in children who are mentally defective and in idiocy may be suspended altogether or represented by mere babbling, grunting, or echolalia. Complete mutism is seen in various forms of dementia, and also is brought about in children by complete deafness which supervenes before the sixth year.

Lisping and stammering are familiar types of speech disturbance which need only to be mentioned. The same may be said of those types which are due to local disturbances about the oral cavity, of which hare-lip, cleft-palate, and perforation of the palate are the most common. In the former there is an interference with the proper pronunciation of the labials, while in the latter two there is an interference of the palatals accompanied by a nasal twang. To this group of easily identified causes of speech disturbance, also belong adenoids, toothlessness, tonsillar hypertrophy, glossitis, jaw dislocation, dry mouth, quinsy, mumps, stomatitis, baby talk (idioglossia).

This leaves the two chief categories of speech disturbance to be considered, namely aphasia and dysarthria. Aphasia may be defined as impairment or loss of speech due to the loss of memory for those signs, vocal or written, used in the exchange of ideas. Aphasia is due to disease, organic or functional, of centers in or near the cortex of the brain. These centers exist on both sides, but in right-handed persons the speech centers on the left side of the brain predominate. Speech is, therefore, a cortical function. The chief types of aphasia theoretically are motor (lesions of the speech and writing centers) and sensory (lesions of the auditory and visual centers). Clinically, however, we meet usually not with pure visual, auditory, or motor aphasia, due to a small focal lesion, but with combinations of these or with total aphasia, the result of a larger destructive lesion implicating several or all of the speech centers. Articulation is, however, mainly bulbar. Disordered articulation or dysarthria signifies difficulty in performing the coördinated muscular movements necessary for the production of the consonants and vowels which go to form syllables and words. In simple dysarthria there is no affection of the cortical centers. Difficulties in articulation are the result of defects consisting either in paralysis or incoördination of certain groups of muscles in the lips, tongue, palate, pharynx, or larynx.

When a subcortical lesion occurs, cutting off Broca's cortical area from the motor mechanism connected with articulation, as often happens with vascular lesions of the left internal capsule, the condition is spoken of as subcortical motor aphasia. The individual cannot speak because he cannot recall the motor memories of muscular movements concerned in articulation. Subcortical motor aphasia may, therefore, be classed as an anarthria as well as an aphasia. This renders the distinction between aphasia and anarthria (including dysarthria) not quite absolute, and on this account, as well as for reasons of convenience and practicality, the diseases listed below will include both aphasia and dysarthria.

Cerebral Hemorrhage (*Apoplexy*).—*Characteristics*.—Aphasia is a frequent result of the hemiplegic attack (right hemiplegia in right-handed persons; left-sided in left-handed persons). Transitory aphasias are extremely common, occurring in at least one-half of the attacks. Permanent aphasias are rarer, about one-half of the patients recovering. The different forms of aphasia and their localization significance are discussed above under the caption note. Even without marked aphasia difficulty in speaking and slowness are common. The difficulty, when actual aphasia does not exist, is one of articulation rather than of speech; the voice is thick and indistinct, the labials are improperly pronounced, and from the physical interference which the paralyzed half of the tongue, lips, and cheek muscles causes, the enunciation is slurring, indistinct, and thick.

Chief Signs.—History of an apoplectic attack with coma, coming on suddenly or more gradually; recovery of consciousness in about twenty-four hours with febrile reaction; existence of hemiplegia, partial or complete, of the face, arm, and leg on one side; gradual return of reflexes on the paralyzed side, with later rigidity and increased deep reflexes and Babinski; patient usually over forty with signs of arterial disease; engorged vessels of the disk; increased blood-pressure.

Cerebral Thrombosis (*Cerebral Softening*).—*Characteristics*.—Typical aphasia is produced if the arterial disease involves the branches of the middle cerebral vessels on the left side of the brain in right-handed persons, and vice versa. The different forms of aphasia and their localization significance are discussed above under the caption note.

Chief Signs.—Occurrence in older individuals or in syphilitic adults; premonitory symptoms common; onset gradual (paralysis may start in one hand and extend); loss of consciousness less apt to occur, or developing in progressive stages (in syphilis usually absent); arteries often markedly atheromatous; blood-pressure apt to be low.

Cerebral Embolism (*Cerebral Softening*).—*Characteristics*.—As in thrombosis (see above).

Chief Signs.—Occurrence in young adults; presence of acute endocarditis or an acute infectious disease; sudden onset without premonitory symptoms; unconsciousness not apt to occur; convulsion common; may be emboli elsewhere; hemiplegia, usually transient; may be high blood-pressure.

Cerebral Abscess.—*Characteristics*.—Partial word-deafness may occur if there is a left temporoparietal abscess.

Chief Signs.—See page 84.

Cerebral Tumor.—*Characteristics*.—Various forms of aphasia may occur, depending on the site of the tumor and the involvement of the different centers by extension. A tumor of the prefrontal region may by extension involve the speech area; one in the motor area may encroach upon the speech center in Broca's area; one in the parietal region on the left side may cause word-blindness, mind-blindness, or word-deafness. An occipital lobe tumor by extension into the angular gyrus may produce word-blindness. Aphasia occurs only with bilateral involvement of the internal capsules. A tumor of the medulla may cause difficulty in articulation (dysarthria).

Chief Signs.—See page 832.

Neurosis ("Hysteria").—*Characteristics*.—"Hysterical" aphasia is paradoxical

and polymorphic and usually differs from organic aphasia in some curious fashion, according to the caprice of the patient. Thus, for example, a patient with "hysterical" aphasia may also have peculiar tricks of intonation or of accent.

Chief Signs.—Existence of other stigmata of "hysteria," especially "hysterical" hemiplegia.

Migraine.—*Characteristics.*—Transient aphasia occasionally occurs and may be intermittent. It may be associated with hemianopsia and usually precedes the pain.

Chief Signs.—See page 6.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—The speech defects are entirely articulatory and give rise to the staccato scanning or syllabic utterance, which though a classical sign, is of rare occurrence. Minor degrees of articulatory impediment are, however, not uncommon, especially indistinct pronunciation of the explosives b, d, g, and a monotonous voice, in which the syllables are uttered hesitatingly and slowly.

Chief Signs.—See page 626.

Friedreich's Disease.—*Characteristics.*—The speech is characteristic and is of a hesitating, syllabic, explosive order. It results from an incoördination of the articulatory and respiratory muscular mechanism. On attempting to speak the expiratory and vocal muscles are thrown into strong contractions but the glottic opening remains closed. After an effort the air passes through the glottis, giving vent to a loud explosive sound.

Chief Signs.—See page 21.

General Paralysis (*General Paralysis of the Insane; Dementia Paralytica*).—*Characteristics.*—The articulation is slurring and tremulous, the commencement of a sentence being relatively distinct, but terminating in an inarticulate drawl. The most difficult phrases to utter are those containing the linguals and labials as in "third riding artillery brigade."

Chief Signs.—See page 100.

Huntington's Chorea (*Chronic Progressive Chorea*).—*Characteristics.*—The speech is slow and hesitating, and eventually becomes indistinct.

Chief Signs.—See page 746.

Infantile Cerebral Paralysis.—*Characteristics.*—In the congenital cases speech may never be acquired. In those cases which commence after the child has learned to speak, motor aphasia, sometimes temporary, at other times partial and complete, may be observed. In nearly all cases speech is slowly acquired. Articulation is slow, hesitating, or stammering and accompanied by facial overaction and slobbering. It not infrequently assumes the form of lalling.

Chief Signs.—See page 312.

Myasthenia Gravis.—*Characteristics.*—At the beginning speech is normal or may be nasal in tone or may possess certain slight defects. As talking continues the defects become accentuated until eventually there is a complete anarthria which disappears with rest.

Chief Signs.—See page 835.

Paralysis Agitans (*Parkinson's Disease*).—*Characteristics.*—As the disease advances the voice becomes feeble and piping and reduced to a monotone. The

articulation like the gait acquires a festinant character. The patient begins to speak slowly but tends to hurry, so that the final syllables are pronounced hastily.

Chief Signs.—See page 41.

Postdiphtheritic Paralysis.—*Characteristics.*—The voice is nasal, and certain consonants are altered ("b" becomes "m"; "d" becomes "n"; "k" becomes "ng," etc.), so that articulation as a whole is indistinct. This indistinctness of articulation is increased when the patient stoops forward, and diminishes or disappears on lying with the head thrown backward.

Chief Signs.—History of diphtheria two to three weeks previous; palate first paralyzed (nasal voice, regurgitation of food through the nose); may be loss of power of ocular accommodation, or diplopia and squint; may be presence of the light reflex with accommodation lost; may be other paralyses (limbs, trunk, diaphragm, etc.); negative Schick test; throat culture.

Bulbar Paralysis (*Glosso-labio-laryngeal Paralysis*).—*Characteristics.*—Owing to progressive weakness of the muscles of articulation with atrophy and tremor, speech becomes more and more indistinct. Earliest the consonants l, r, n, s, t (linguals), then o, u, p, b, m, become difficult of pronunciation. The voice is often nasal from palatal paralysis; later speech becomes unintelligible.

Chief Signs.—Gradual onset; speech affected first; weakness and wasting of the tongue and lips with fibrillary tremor and contractions; dysphagia; dribbling of saliva; regurgitation of fluids through the nose; partial reaction of degeneration.

Pseudobulbar Paralysis.—*Characteristics.*—There is thick, indistinct articulation resembling that of true bulbar paralysis. There may be complete anarthria.

Chief Signs.—History of hemiplegia on one side, followed later by hemiplegia on the other side; dribbling of saliva; difficulty in swallowing; absence of atrophy or fibrillary tremor of the affected muscles; emotionalism (laughing and crying).

Facial Paralysis.—*Characteristics.*—The labials, p and b, and the labiodentals, f and v, are indistinct and especially so when the palsy is bilateral.

For causes of Facial Paralysis, see page 47.

Acute Alcoholism.—*Characteristics.*—The articulation is slurring, being especially marked in the pronunciation of labial and linguo-dental consonants. This is only temporary. Many alcoholic patients realize their own articulative difficulty, and in endeavoring to compensate for it they utter certain words with a deliberation and undue emphasis that betrays them.

Chief Signs.—See page 37.

Chorea (*Sydenham's Chorea*).—*Characteristics.*—In severe cases speech becomes hesitating and jerky and may be even reduced to a whisper.

Chief Signs.—See page 746.

Idiocy.—*Characteristics.*—In the lowest forms babbling, grunting, and echolalia are the characteristics, and also the use of words of the patient's invention. Lalling and stammering are of frequent occurrence, but are more likely to be met with as the scale is ascended.

Chief Signs.—See page 41.

Hereditary Cerebellar Ataxia.—*Characteristics.*—Speech is a hesitating, scanning, and usually explosive form of articulation.

Chief Signs.—Familial and hereditary character (seventeen to thirty-five years); reeling, staggering, or drunken gait; irregularity, uncertainty, and sometimes tremor

in the movements of the arms; asynergia; dysdiadochokinesis; knee-jerks increased; may be optic atrophy; absence of deformity.

Progressive Lenticular Degeneration (*Wilson's Disease*).—*Characteristics*.—Interference with speech and swallowing is a prominent feature of the disease. The dysarthria is characterized by a slurring of the consonants and a cutting off of the last syllables. Toward the end there may be a total dysarthria.

Chief Signs.—Familial character; occurrence in the latter part of the second decade; chronic progressive fatal course (few months to several years); fine tremor of paralysis agitans type; progressive muscular rigidity which may lead to contractions; dysphagia; mental symptoms (emotionalism and progressive dementia).

Myxedema.—*Characteristics*.—The speech is apt to be slow, as are other motor acts. It is monotonous, and the thickened lips further contribute to make it at times unintelligible.

Chief Signs.—See page 697.

Less Common Causes.—Acute ascending paralysis; ataxic paraplegia; bromidism; gummatous meningitis; myelitis; multiple neuritis; depressed fracture of the skull; psychoneurosis; epilepsy (monotonous speech); unilateral hypoglossal paralysis (wounds); facioscapulohumeral myopathy (Landouzy-Déjerine); tabes dorsalis; double athetosis; malingering; melancholia; "shell-shock"; acute ascending paralysis; amyotrophic lateral sclerosis; acute febrile polyneuritis; progressive muscular atrophy; infundibular syndrome; narcotic poisoning; cerebral arteriosclerosis (transient and due to angiospasm); "neurasthenia"; pregnancy; Raynaud's disease (transient aphasia); uremia (transient aphasia).

STATURE, TALL

(For stature, short, see "Dwarfism and Infantilism," page 710.)

Acromegaly.—*Characteristics*.—The height may be increased, but this is not as marked as the other signs unless the onset began before ossification of the epiphysis.

Chief Signs.—Onset after puberty; gradual increase in features which become heavy and thick, especially the nose, eyelids, tongue, ears, lower jaw, and malar bones; enlarged hands and feet ("spade hands"); heavy growth of hair; headache; ocular symptoms (bitemporal hemianopsia, increasing blindness, optic neuritis, exophthalmos); may be deafness; first diabetes, later increased carbohydrate tolerance; x-ray of the sella turcica.

Gigantism.—*Characteristics*.—The stature may be greatly increased.

Chief Signs.—Onset before puberty; appearance normal or suggesting acromegaly; often physical and mental weakness.

Less Common Causes.—Hypertrophy of the suprarenal cortex; teratoma of the pineal body.

STERILITY IN THE FEMALE

Sterility is the absence of pregnancy under circumstances that normally lead to pregnancy. While the female is often at fault, the male may be to blame in one-fourth to one-third of the cases. The term sterility here is limited to "absolute

sterility," in which there is absence of pregnancy and not merely inability to bring forth a living child. Dyspareunia, difficult or painful coitus, is an obvious cause of sterility. (For causes of Dyspareunia, see page 589.) The use of douches which interfere chemically or mechanically with the process of impregnation is a common cause of premeditated sterility. The general health may be so poor that all the organs of the body are in too poor a condition to properly functionate, the genital organs among them. This is seen in some cases of marked anemia and emaciation, and general depression. On the other hand it is present at times in patients who are inclined to stoutness (possibly due to deficient ovarian activity). Incompatibility between husband and wife sexually is an ill-defined condition, which, however, is fully believed to be a cause of sterility. The influence of age on child-bearing must not be forgotten, the liability to conceive falling rapidly every year over thirty.

Laceration of the Pelvic Floor.—*Characteristics.*—When there has been a marked laceration, the vagina may be so relaxed and patulous that the semen is not retained in contact with the cervix long enough for the spermatozoa to pass up into the uterine cavity.

Chief Signs.—See page 582.

Chronic Vaginitis.—*Characteristics.*—The discharge incident to the chronic inflammation may interfere chemically with the vitality of the spermatozoa or mechanically with their progress to, or entrance into, the cervix uteri.

Chief Signs.—See page 572.

Stenosis of the Cervix.—*Characteristics.*—The combination of a long pointed cervix and a "pin-hole" os is a frequent cause of sterility. The cervix may, in addition, be sharply flexed.

Chronic Endocervicitis.—*Characteristics.*—The excessive secretion of tenacious mucoid material may so plug the cervical canal as to constitute a barrier against the entrance of spermatozoa.

Chief Signs.—See page 570.

Chronic Endometritis.—*Characteristics.*—A chronic interstitial endometritis such as occasionally follows gonorrheal or puerperal sepsis may so affect the mucous membrane as to make it poor soil for the reception and nourishment of the ovum.

Chief Signs.—See page 573.

Retroversion of the Uterus.—*Characteristics.*—The cervix may be thrown so far forward that spermatozoa do not readily enter the os. In addition, in long-standing cases there is often a chronic metritis or endometritis, which is also a contributing factor.

Chief Signs.—See page 575.

Anteflexion of the Uterus.—*Characteristics.*—The cervix may be thrown so far forward as to be lifted out of the seminal lake.

Chief Signs.—See page 576.

Uterine Fibroids (*Fibromyomata of the Uterus*).—*Characteristics.*—In large tumors mechanical difficulties arise which are unfavorable to conception. Even before a fibroid uterus has reached this stage, however, for some unknown reason the likelihood of pregnancy is diminished.

Chief Signs.—See page 573.

Salpingitis (*Gonorrheal or Tuberculous*).—*Characteristics.*—Occlusion of the

lumen of the tubes is common, interfering with the entrance of the spermatozoa and of the ovum into the tube.

Chief Signs.—See page 574.

Genital Infantilism (*Infantile Uterus*).—*Characteristics.*—This is the commonest type of congenital deformity causing sterility.

Chief Signs.—Bimanual palpation, revealing a uterus, the fundus of which constitutes only a third of its length, or the “cochleate” uterus of Pozzi, which is unusually curved anteriorly, with long conical cervix and small external os; may be severe dysmenorrhea; nervous instability.

Less Common Causes.—Vaginismus; congenital absence of the uterus, tubes, or ovaries; pseudohermaphroditism; cervical polyp; carcinoma of the uterus; oöphoritis; ovarian tumor; genital fistula; hyperinvolution of the uterus; prolapsed ovaries; tuberculosis of the ovaries; malformation of the fallopian tubes; tumor of the fallopian tubes; prolapse of the uterus; x-ray therapy; consanguinity; racial intermarriage; chlorosis; tuberculosis; diabetes; leukemia; exophthalmic goiter; chronic nephritis; Addison’s disease; chronic poisoning of morphin, arsenic, alcohol, lead, phosphorus; hypophysis disease.

STERILITY IN THE MALE

(See also “Impotence,” page 727.)

Sterility is an inability to beget children on account of absence or imperfection of the semen. To the condition of spermatic fluid containing no spermatozooids the name azoöspemia has been applied. Debilitating disease and mental or physical exhaustion may bring about a temporary sterility. The latter is the cause of temporary sterility in many business men. They can impregnate their wives only after a vacation has supplied them with surplus energy. Certain chemical toxemias (as alcohol) may produce the same result. The x-ray, too, deserves special mention as a cause. Brief exposure to this may entail brief sterility. The constant exposure to the influence of the rays to which radiographers are subjected results in a prolonged and perhaps a permanent sterility. Oligospermia is a rare and apparently congenital condition in which the semen instead of swarming with spermatozooids contains but few of these. They are usually deformed. Such a condition causes sterility. Ten per cent of sterility is said to be due to the male.

Chronic Gonorrheal Epididymitis (*Bilateral*).—*Characteristics.*—Sterility is inevitable if the ducts are completely occluded, yet the patient is not impotent, his sexual power and appetite are unimpaired. He ejaculates semen resembling the healthy fluid in quantity, smell and color, but containing no spermatozoa. Non-gonococcic epididymitis is so rarely bilateral that complete sterility rarely results.

Chief Signs.—History of an attack of acute epididymitis occurring from the third to the eighth week following a gonorrheal infection with involvement of the posterior urethra and “swelled testicles.”

Chronic Prostatitis (*Chronic Posterior Urethritis*).—*Characteristics.*—If the inflammation has been severe the spermatozoa may be killed in transit, but even a mild catarrh may so alter the qualities of these secretions as to render the spermatozoa infertile.

Chief Signs.—May be persistent urethral discharge, disturbance of urination (frequency, pain, urgency, slow stream, or even obstruction); may be pain in the back in the upper sacral region, constant and aching in character, uninfluenced by urination; peculiar sense of fullness in the perineal region, excited by continued pressure against the perineum with preference for a hard seat rather than a soft one; pain just behind the glans penis and at the penoscrotal angle; premature ejaculation.

Chronic Seminal Vesiculitis.—*Characteristics.*—Same as above (chronic prostatitis) with which it is always associated (see above).

Chief Signs.—May be history of attacks simulating renal colic; pain in the rectum, spontaneous or excited by defecation, urination, erection, or ejaculation; frequent urination; may be painful testicle; may be relapsing epididymitis; may be arthritis.

Less Common Causes.—Varicocele; atrophy of the testicles; epispadias; perineal fistula; eunuchism.

STOOLS, BLOOD IN; AND PASSAGE OF BLOOD PER ANUM

(*Melena: Occult Blood; Anorectal Bleeding*)

The most common source of bleeding through the anus is the rectum and the anus itself. If the bleeding is high up in the gastro-intestinal tract the blood is usually altered in appearance, the stools being black and tarry; if it comes from the lower ileum or colon or lower it is red. It must be remembered that iron and bismuth sulphid cause the stools to be dark, but they are usually slaty or dirty grayish-black. Charcoal will also cause black stools. Blood may be present in the stools though invisible (occult blood) and chemical tests will be required to detect its presence.

Hemorrhoids.—*Characteristics.*—Bleeding occurs from superficial or deep ulcers that injure small or large vessels (veins), especially in internal hemorrhoids. The blood is apt to occur in streaks adherent to the feces; but in severely bleeding "piles," the evacuation of feces is often followed by a free discharge of blood which may stain the toilet basin bright red; in such a case the bleeding may continue a moment or for hours, and the amount of blood lost may vary from a few drops to one-half pint or more. Generally the hemorrhage is arrested by replacing the hemorrhoids above the sphincters.

Chief Signs.—See page 591.

Fissure in Ano.—*Characteristics.*—This condition is invariably accompanied by slight bleeding during defecation and blood is seen as a single long streak on the fecal bolus, as bright red drops upon the excrement, or as a smear on toilet paper.

Chief Signs.—See page 591.

Proctitis.—*Characteristics.*—Bleeding from the rectum is common, but symptoms from it are never alarming, since the blood comes from erosions, through which it oozes intermittently or is driven by feces during defecation. Ordinarily the only evidence of bleeding is a smear or streak of blood on the feces; but when ulcers form, mixed infection complicates proctitis, and small or considerable amounts of blood may be lost.

Chief Signs.—See page 591.

Chronic Ulcerative Colitis.—*Characteristics.*—The motions are usually small and the feces are separate. There may be clotted lumps of blood, or the blood is uniformly mixed, and the motions look like anchovy sauce.

Chief Signs.—See page 703.

Carcinoma of the Rectum.—*Characteristics.*—Traces of blood may be passed from time to time, and sometimes a sanguinous discharge occurs, especially after the neoplasm degenerates and deep craterlike ulcers form.

Chief Signs.—See page 592.

Duodenal Ulcer.—*Characteristics.*—Bleeding is frequent and manifested either by occult blood or gross blood in the stools. When there is much hemorrhage the feces may look like tar or soft asphalt; sometimes they are formed and of a brownish-black color, and the patient's suspicion of hemorrhage is aroused only by noticing a margin of blood around the feces in the water after an evacuation.

Chief Signs.—See page 466.

Ulcer of the Rectum (*Simple, Syphilitic, Tuberculous, Dysenteric, Typhoidal, Balantidic, Chancroidal*).—*Characteristics.*—At one time or another bleeding occurs which may be insignificant or alarming, depending on the number and size of veins or arteries involved.

Chief Signs.—See page 591.

Amebic Dysentery.—*Characteristics.*—The stools are bloody, or mucus and blood occur together. In very severe cases there may be constant tenesmus, with pain of the greatest intensity, and the passage every few minutes of a little blood and mucus.

Chief Signs.—See page 701.

Bacillary Dysentery.—*Characteristics.*—At first mucus is passed in the stools, but within twenty-four hours blood appears with it, or there is pure blood; every hour or half hour there may be a small amount of blood and mucus passed.

Chief Signs.—See page 701.

Carcinoma of the Colon.—*Characteristics.*—Occult blood first occurs in the stools. As the growth enlarges or ulceration supervenes there results a mucopurulent, blood-tinged discharge and "coffee-ground" or tarry stools, but clear blood may be discharged when the growth is in the lower sigmoid.

Chief Signs.—See page 680.

Acute Enterocolitis (*Ileocolitis*).—*Characteristics.*—The stools contain easily visible mucus-looking flocculi and shreds which are occasionally tinged with blood, especially in cases in which the inflammation has gained in intensity.

Chief Signs.—See page 700.

Carcinoma of the Stomach.—*Characteristics.*—Occult blood in the feces is more frequently found in malignancy of the stomach than in ulcer.

Chief Signs.—See page 494.

Typhoid Fever.—*Characteristics.*—Hemorrhage from the bowels occurs as a serious complication in about 7 per cent of all cases. There may be a slight trace of blood in the stools, but often it is a profuse, free hemorrhage. It occurs most commonly between the end of the second and the beginning of the fourth week. It usually comes without warning. A sensation of sinking or collapse is experienced by the patient, the temperature falls and may drop six or seven degrees in a few hours.

Chief Signs.—See page 701.

Gastric Ulcer.—*Characteristics.*—Melena occurs occasionally if the ulcer is near the pylorus, but rarely without hematemesis. Dark stools may be noticed for two or three days following hematemesis.

Chief Signs.—See page 494.

Fistula in Ano.—*Characteristics.*—Fistulas seldom bleed except when probed or encroached upon by syphilitic, chancreoid, or other types of ulceration, and in either case hemorrhage is unimportant.

Chief Signs.—See page 808.

Injury of the Rectum or Anus.—*Characteristics.*—Bleeding from this source may be slight, moderate, profuse, or in rare instances fatal. The blood is bright red and independent of defecation. The history and inspection of the anus and rectum are sufficient factors for diagnosis.

Stricture of the Rectum.—*Characteristics.*—There is usually a discharge composed of admixed blood, pus, and mucus, but annoying or profuse bleeding is rare unless induced by operative interference or the evacuation of scybala.

Chief Signs.—See page 591.

Intussusception.—*Characteristics.*—Bloody stools are a very constant symptom (over 75 per cent). There are often only two or three thin, diarrheal movements, and then only blood and mucus are passed with no trace of feces and with no fecal odor. The amount of blood varies from a quantity sufficient to stain the mucus, to an ounce of semi-fluid blood. It rarely occurs without some mucus. Such discharges frequently follow attacks of severe colicky pain, and may occur several times in an hour.

Chief Signs.—See page 678.

Cirrhosis of the Liver (*Alcoholic or Portal*).—*Characteristics.*—Following the hematemesis, melena (dark tarry or pitchy stools) is common; but hemorrhages from the bowels may occur for several years without hematemesis.

Chief Signs.—See page 521.

Ankylostomiasis (*Hookworm Disease*).—*Characteristics.*—Occult blood is present constantly in the stools, which are often reddish-brown in color and contain the microscopic ova of the parasites.

Chief Signs.—See page 644.

Fecal Impaction.—*Characteristics.*—Occasionally rectal hemorrhage occurs from lacerations in the mucosa made by the passage of hardened fecal accumulations (scybala) or from stercoral ulcers resulting from pressure necrosis, caused by retained hard fecal masses.

Chief Signs.—See page 593.

Rectal Polypus or Adenoma.—*Characteristics.*—Polyps that remain above the sphincters seldom bleed, but when they attain considerable size, become fragile and protrude, bleeding ensues, since their frequent replacement causes the formation of erosions, ulcers, or part or all of the growth breaks off. The rarer papillomatous or villous tumors invariably cause daily slight or profuse bleeding.

Chief Signs.—See page 592.

Condylomata (*Lata or Acuminata*).—*Characteristics.*—When occurring in the anal canal, at the mucomembranous juncture or upon the perianal skin, these warty

growths occasionally form masses that degenerate into superficial ulcers, or they may be broken off during defecation, and in either case bleeding may ensue.

Chief Signs.—See page 597.

Papillary Varicosities of the Anal Canal.—*Characteristics.*—These may be a constant source of bleeding which is augmented by defecation.

Chief Signs.—Occurrence independently or associated with hemorrhoids, syphilis, tuberculosis, or arteriosclerosis; speculum examination, revealing numerous, diminutive, bluish, granulation-like swellings involving areas in the mucosa, which, when they ulcerate, coalesce and form single or multiple denuded varicose patches of considerable size.

Henoch's Purpura.—*Characteristics.*—Melena may occur during an attack of abdominal colic, with diarrhea, vomiting, or constipation, the picture closely simulating intussusception, mesenteric embolism, or appendicitis.

Chief Signs.—See page 791.

Less Common Causes.—Operative and postoperative bleeding (in rectal or anal surgery); angioneurotic edema; profound anemia; leukemia; purpura hæmorrhagica (usually epistaxis, hematuria, and hemoptysis); hemorrhagic smallpox; splenic anemia; melena neonatorum (morphus maculosus neonatorum); bilharzia hematobia (common cause in tropical climates); foreign body in the rectum (swallowed or introduced); cryptitis; procidentia recti; prolapsus ani; hemorrhagic proctitis; rectal diverticula; invagination of the sigmoid flexure into the rectum; arteriosclerosis; tabes dorsalis; amyloid disease; colonic chromatosis; acute arsenic poisoning; swallowed blood; chronic Bright's disease; oxyuris vermicularis infection; omphilitis; gastric or duodenal erosions; achylia gastrica; portal thrombosis; cholelithiasis; jaundice; carcinoma of the liver; chronic intestinal obstruction; diverticulitis; scurvy; tetany; malaria; pellagra; cardiac disease; septicopyemia; extensive skin burns; hemophilia; acute hemorrhagic pancreatitis; mesenteric embolism or thrombosis; mercurial poisoning; dengue; aplastic anemia; acute yellow atrophy of the liver; angioma of the intestine; benign gastric tumor.

STOOLS, MUCUS IN

This occurs in a great variety of conditions, making rather difficult its complete differential diagnosis. Its presence often indicates organic disease, usually of the large bowel, for if it comes from the small bowel it will, unless the motions are very fluid, be so incorporated with them that it cannot be seen. It is often present in constipated motions, the hard feces having led to irritation of the large bowel, with consequent excessive secretion of mucus; if this has lain some time in the bowel it has become coagulated into white shreds, which can be seen attached to the stools, appearing somewhat like parasitic worms. In severe cases a movement may consist almost entirely of these shreds; there may be little fecal matter. If the mucus has not lain too long in the bowel it appears like a jelly outside the stool. As a rule, the mucus can be made plainly visible in the finely water-triturated feces poured out on a black plate.

Mucomembranous Colitis (*Mucous Colitis*).—*Characteristics.*—Defecation is usually attended with pain and the expulsion of mucus. Simultaneously with the fecal evacuation, large quantities of mucus in the shape of the well-known bands

are expelled. This mucus may be ribbonlike, three to four inches long, in irregular shreds of various shapes, or in the form of regular hyaline casts of the intestinal tube. Occasionally the evacuation of mucus takes place by itself, the passage containing nothing but mucus.

Chief Signs.—See page 681.

Carcinoma of the Rectum.—*Characteristics.*—There may be passage of pus, blood, or mucus in the stools, in advanced cases.

Chief Signs.—See page 592.

Carcinoma of the Colon.—*Characteristics.*—Blood, mucus, and occasionally fragments of the growth may at times be found in the stools.

Chief Signs.—See page 680.

Intussusception.—*Characteristics.*—The patient, usually between six and twelve months of age, is taken sick suddenly with severe pain and vomiting. There may be one or two loose fecal stools, then only blood and mucus are passed without any admixture of feces.

Chief Signs.—See page 678.

Acute Enterocolitis (Ileocolitis).—*Characteristics.*—The fecal matter may contain isolated particles of mucus and easily visible mucous-looking flocculi, transparent or turbid, and shreds which are occasionally tinged with blood. At times there may be much mucus, in small lumps, intimately mixed with the feces, imparting to the stools a jellylike consistency.

Chief Signs.—See page 700.

Chronic Enterocolitis (Chronic Intestinal Catarrh).—*Characteristics.*—The presence of mucus in the feces over a period of time is characteristic of catarrh of the colon. This mucus is evacuated with the feces or may be demonstrated by a test lavage of the colon. It is always composed of rather large and coarse shreds, and is lighter in color and more transparent in proportion as its origin is farther up the intestine. The higher up in the colon the mucus originates, the smaller are the individual flakes and the more uniformly distributed are they found in the feces. Without the demonstration of mucus it is impossible to diagnose catarrh of the large intestine.

Chief Signs.—See page 702.

Internal Hemorrhoids.—*Characteristics.*—They cause pain, a sense of fullness, and often bleeding and a mucous discharge.

Chief Signs.—See page 597.

Fecal Impaction.—*Characteristics.*—It is most common in elderly females with chronic constipation. The fecal masses may be semi-solid or as hard as stone, and are generally coated with mucus.

Chief Signs.—See page 593.

Rectal Polypus or Adenoma.—*Characteristics.*—Polypus recti, the most common benign tumor of the rectum, and most common in children, is accompanied by symptoms of irritation with the occasional passage of blood or mucus.

Chief Signs.—See page 592.

Proctitis.—*Characteristics.*—There are tenesmus and frequent bowel movements, with mucus, pus, or blood.

Chief Signs.—See page 591.

Chronic Constipation.—*Characteristics.*—The stool of chronic atonic con-

stipation is usually small in volume, consisting of variously sized, hard nodules and lumps which are partially coated with a thin, varnishlike, shiny layer of rectal mucus.

Chief Signs.—See page 32.

Amebic Dysentery.—*Characteristics.*—In the acute form the stools are bloody, or mucus and blood occur together. In very severe cases there may be passages every few minutes of a little blood and mucus. In the chronic forms there are exacerbations with frequent passages of mucus and blood.

Chief Signs.—See page 701.

Bacillary Dysentery.—*Characteristics.*—At first mucus is passed, but within twenty-four hours blood appears with it, or there is pure blood.

Chief Signs.—See page 701.

Tuberculosis of the Intestine.—*Characteristics.*—A subacute abscess may form in the right iliac fossa, which is the most common locality, and if there is ulceration of the intestinal mucosa, diarrhea with blood and mucus in the stools occurs.

Chief Signs.—See page 705.

Less Common Causes.—Foreign body in the rectum; bilharzia of the sigmoid flexure; prolapsus ani or recti; syphilitic ulceration of the intestine; ascaris lumbricoides infection.

STOOLS, PUS IN

The presence of pus in the stools in sufficient amount to be recognizable by the naked eye usually indicates the rupture of an abscess into the intestinal tract; but the symptom is rare, for even when a large appendicular or other abscess perforates into the intestine, the pus either becomes indistinguishable when mixed with the feces, or unrecognizable on account of digestion and decomposition. The less the pus is mixed with other intestinal contents, the nearer to the anus has the site of rupture been. Pus in the stools may be only recognizable on microscopic examination.

Submucous Abscess of the Rectum.—*Characteristics.*—Accompanying itching and throbbing pain in the rectum, worse on defecation and on walking, an abscess forms which can be felt by digital examination and which may rupture into the rectum.

Chief Signs.—See page 592.

Acute Ischiorectal Abscess.—*Characteristics.*—Left to itself this abscess usually breaks through the weakest portions of its walls *i.e.*, through the skin alongside of the anus, and through the mucous membrane towards the back of the anal canal (between the sphincters) at the point where the posterior edges of the levatores ani join the anococcygeal ligaments.

Chief Signs.—Throbbing pain in the rectum, intensified by coughing, walking, sitting, and defecation; may be retention of urine; constitutional symptoms of sepsis; hot, red, brawny, tender, edematous induration between the anus and ischial tuberosity, and on passing a finger into anal canal the presence of a tender elastic swelling.

Fistula in Ano.—*Characteristics.*—There may be a purulent discharge from the anus, with admixture of pus in the stools.

Chief Signs.—Pain during defecation; tenesmus; presence of a fistula (examination by finger or proctoscope).

Proctitis.—*Characteristics.*—There are frequent bowel movements with tenesmus, containing mucus, pus, or blood.

Chief Signs.—See page 591.

Fecal Impaction.—*Characteristics.*—Stercoral ulcers may occur and give rise to a mucopurulent sanious discharge from the rectum, often associated with tenesmus.

Chief Signs.—See page 593.

Appendicular Abscess.—*Characteristics.*—The situation of the appendix will determine the location of an abscess when it occurs, which may rupture into the general peritoneal cavity (most frequently), through the abdominal wall, or into a neighboring hollow viscus, such as the intestine. In the last case the pus will appear in the stools.

Chief Signs.—History of appendicitis, see page 679.

Cholecystic Abscess.—*Characteristics.*—In severer grades of cholecystitis there is always a pericholecystitis, and suppuration with the formation of adhesions to neighboring viscera may occur. The gall-bladder may perforate into the stomach or bowel discharging pus into the intestinal tract.

Chief Signs.—History of cholecystitis, see page 471.

Perinephritic Abscess.—*Characteristics.*—A perinephric abscess usually points alongside of the erector spinæ muscles, but may descend into the iliac fossa or burst into the pleura, peritoneum, or intestine.

Chief Signs.—History of perinephritis, see page 547.

Less Common Causes.—Psoas abscess; pelvic abscess; perigastric abscess; pyosalpinx; foreign body in rectum; carcinoma of the colon; dysentery; carcinoma of the rectum; enterocolitis (microscopic); prostatic abscess.

SWEATING, EXCESSIVE PARTIAL

The commonest type of partial excessive sweating is that of the feet, which often accompanies diseases of the arches. Excessive sweating of the face may accompany one or other of the seborrheic diseases. Usually there is soon an accompanying bromidrosis (offensive sweating). The victim of masturbation may perspire profusely on the palms.

Rickets (*Rachitis*).—*Characteristics.*—Profuse sweating about the head and neck at night is a symptom of great importance in the early stages. In the morning the pillow is found soaked with perspiration.

Chief Signs.—See page 685.

Aneurysm of the Arch of the Aorta.—*Characteristics.*—In some cases there is unilateral sweating of the face or upper extremity due to pressure (irritation) on the sympathetic trunk. This is usually left-sided and accompanied by dilatation of the pupil on the same side and flushing of the skin. It is produced by aneurysm usually of the transverse portion.

Chief Signs.—See page 454.

Mediastinal Tumor.—*Characteristics.*—Unilateral circumscribed perspiration and flushing sometimes occur from irritation of the sympathetic trunk in tumors of the middle and posterior mediastinum.

Chief Signs.—See page 432.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics*.—Local sweating may develop in the course of the lightning pains and may be associated with other trophic changes, such as herpes and edema.

Chief Signs.—See page 619.

Multiple Neuritis (*Peripheral Neuritis*).—*Characteristics*.—Sometimes local sweating is profuse, occurring in the affected parts (usually the extremities).

Chief Signs.—See page 648.

Paralysis Agitans (*Parkinson's Disease; Shaking Palsy*).—*Characteristics*.—Localized sweating may be present.

Chief Signs.—See page 41.

Less Common Causes.—Chronic infectious arthritis (hands); trigeminal neuralgia (side of face); facial hemihypertrophy (affected side); hemiplegia (unilateral); syringomyelia (one side of the body); migraine (unilateral); hypertrophic pulmonary osteo-arthritis (palms and soles).

SWEATING, EXCESSIVE GENERAL

(*Hyperidrosis*)

Obesity is a condition in which there is excessive sweating, induced by the same causes that produce moderate sweating in the normal individual.

General sweating may occur as an idiopathic condition, seemingly natural in certain individuals, winter and summer. It is always more marked in the axillæ, genitocrural region, and on the hands and feet. As a rule it is associated with debility from any cause. It is a common accompaniment of the defervescence of fevers and of the asthenic state following them, especially that following influenza. Emotional states, such as fear, may cause it temporarily. Severe pain is another cause, as seen in biliary and renal colic and in the gastric crises of tabes. Likewise, it occurs in conditions of shock and collapse, being most apparent as cold clammy beads of perspiration upon the forehead. Certain drugs, the diaphoretics, namely: pilocarpin, camphor, ipecac, induce it. Otherwise, it is a symptom of some underlying constitutional disease.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics*.—Excessive sweating is a common complaint, often associated with the hot flushes. The hands are often persistently warm and moist.

Chief Signs.—See page 288.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics*.—Drenching perspirations are common and constitute one of the most distressing features of the disease. They occur usually with the drop in the fever in the early morning hours, or at any time in the day when the patient sleeps; they may come on early in the disease, but are more persistent and frequent after cavities have formed. Some patients escape altogether.

Chief Signs.—See page 412.

Neurosis.—*Characteristics*.—Profuse sweating may occur, either local or general, and sometimes nocturnal. The hands are often persistently cold and moist.

Chief Signs.—See page 738.

Acute Rheumatic Fever.—*Characteristics*.—Profuse, very acid sweats of a peculiar sour odor occur in the majority of cases, often associated with abundant

sudaminal and miliary vesicles. The profuse sweats materially influence the temperature curve, being coincident with the remissions. Even in the absence of sweats the skin is moist, and in spite of pyrexia is never dry. If persistent the sweat becomes alkaline or neutral. The drenching sour sweats are more common when salicylates are not used.

Chief Signs.—See page 736.

Septicopyemia (*As in Pyonephrosis, Acute Endocarditis, Empyema, Lung Abscess, Liver Abscess, Infected Wound, etc.*)—*Characteristics.*—Copious, drenching sweats occur, beginning with a remission or intermission in the fever, which may be daily.

Chief Signs.—See page 767.

Malaria.—*Characteristics.*—In the regularly intermittent forms (tertian, quartan, double tertian, double or triple quartan) each paroxysm is composed of three stages: cold, hot, and sweating. As the fever falls in the hot stage, beads of perspiration appear upon the face, and gradually the entire body is bathed in a copious sweat, and is accompanied by a feeling of comfort and often followed by sleep. The sweating varies much; it may be drenching in character or it may be slight.

Chief Signs.—See page 525.

Chronic Myocarditis.—*Characteristics.*—Attacks of collapse may occur in which the patient sweats and has a feeble but slow pulse. In angina pectoris a profuse sweat often breaks out during the attack. Exertion in chronic heart weakness often causes sweating accompanied by dyspnea.

Chief Signs.—See below.

Less Common Causes.—Bronchiectasis (night sweats); epilepsy; gout; hydatid of the lung; miliary fever (sweating sickness); polymyositis; polyneuritis; mediastinal abscess; morphin habit; trench fever; tetanus.

SYNCOPE

(*Fainting Attacks*)

(See also "Coma," page 675, and "Drowsiness, Somnolence, Stupor," page 707.)

Syncope is characterized by a more or less profound state of unconsciousness, by marked weakening of the pulse, pallor of the face and lips, inactive pupils, cold sweat, and cold extremities. Certain persons seem to be predisposed to ordinary fainting, due perhaps to a neurovascular instability which causes a condition of acute anemia of the brain in the presence of a suitable emotional impression. Syncope is ordinarily of little import in young individuals, but may be a serious occurrence in old persons. All weakening, exhausting, debilitating illnesses lead to a manifest predisposition to faintness, which may pass into actual syncope. Hemorrhage of any kind causes syncope, which may pass over into collapse (*q.v.*). Petit mal of epilepsy may be confused with syncope, but the symptoms given above are absent. "Hysterical" coma lasts longer and is unaccompanied by the cardiac and vasomotor disturbances of syncope.

Chronic Myocarditis (*Chronic Heart Weakness; Fatty or Fibroid Degeneration*).—*Characteristics.*—The patient often suffers from faintness or severe syncopal attacks which come on suddenly and are characterized by convulsions, twitching, and stertorous breathing with cold sweats.

Chief Signs.—Dyspnea of any degree; precordial pain; dizziness; headache; feeling of coldness and depression; feeble pulse, often arrhythmic and frequently slow; aortic second sound accentuated; hard arteries; high blood-pressure; hypertrophied heart.

Aortic Stenosis.—*Characteristics.*—Dizziness and faintness are early symptoms, due to defective blood supply to the brain.

Chief Signs.—See page 454.

Chlorosis.—*Characteristics.*—There may be a tendency to fainting, which together with breathlessness and palpitation often give rise to the suspicion of heart or lung disease.

Chief Signs.—See page 643.

Adams-Stokes Syndrome.—*Characteristics.*—Syncope attacks occur, associated with epileptiform convulsions, stertor, and cyanosis.

Chief Signs.—See page 686.

Addison's Disease.—*Characteristics.*—Attacks of syncope occur from cardiovascular asthenia and may prove fatal. The pulse is feeble and irregular during such an attack.

Chief Signs.—See page 787.

Arteriosclerosis.—*Characteristics.*—Dangerous attacks of syncope may occur, especially if accompanied by symptoms similar to those of angina pectoris.

Chief Signs.—See page 831.

Heat Exhaustion.—*Characteristics.*—Syncope follows exposure to heat. From slight attacks the patients recover rapidly when they are placed in a cool atmosphere; in other cases the unconsciousness may end in deep coma and death.

Chief Signs.—See page 834.

Less Common Causes.—Pleural effusion; paroxysmal tachycardia; thymic infantilism; Raynaud's disease; transverse myelitis of the cervical region.

TEMPERATURE, ABNORMALITIES OF

The most practical classification of deviations of temperature from the normal is probably as follows:

Fevers of short duration (less than ten days); fevers of long duration (over ten days without descending to normal); recurring fevers (periods of fever alternating with normal or subnormal temperature); hyperpyrexia (above 106°F.); subnormal temperature.

The vast majority of fevers are due to infection. The other causes are elevation of external temperature, tetanic muscular contractions, lesions of the nerve centers, and the so-called neurotic pyrexia. Neurotic pyrexia, pure and simple, may be non-existent, although excitement and mental unrest often raise an already existing fever, usually temporarily. The diagnosis is made warily and only after prolonged and exhaustive search for other causes.

Fevers of short duration are so numerous that a description of each disease would be impractical and of little value. Most of them are common infectious disorders, the diagnosis of which is relatively easy, or they are usually attended with more or less prompt recovery even though the cause remains obscure.

ELEVATION OVER TEN DAYS

(Prolonged Pyrexia)

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics*.—Fever is an early and extremely important sign and the most valuable measure of the severity and progress of the disease. In the early stages of active tuberculosis there is an afternoon rise in temperature from 1° to 2.6° F., maximum between 2 and 6 p.m. It may be present every day or only every second or third day. It is increased by exercise and may subside after sufficient rest in bed. When the disease is not arrested or continues to spread, the temperature is moderately high and may be intermittent, remittent, or continuous. The temperature may then subside or pass into the hectic type with marked remissions and intermissions. When the disease is involving new areas or spreading rapidly the temperature may be continuous in type or be inverted. In still later stages the temperature is markedly irregular.

Chief Signs.—See page 412.

Typhoid Fever (*and Paratyphoid*).—*Characteristics*.—The temperature rises by steps daily and reaches its maximum by the end of the first week, usually about 104° F. It continues steady during the second week with slight daily variations and becomes remittent in the third week, declining by lysis, the evening temperature often reaching normal at the end of the fourth week. Fever may persist in weak patients in convalescence. Relapses are common. In paratyphoid the rise is more rapid, the course more irregular, the fall more rapid, and the duration only about two weeks.

Chief Signs.—See page 701.

Bronchopneumonia (*Catarrhal Bronchitis*).—*Characteristics*.—The fever is extremely variable, ranging from 102° to 104° F., and sometimes has a duration of many weeks with daily marked variations of three degrees or more.

Chief Signs.—See page 413.

Septicopyemia (*Empyema; Pyonephrosis; Abscess of the Brain, Lung, Liver, or elsewhere; Puerperal Sepsis, etc.*).—*Characteristics*.—The onset of the disease is marked by a severe rigor, when the temperature rises to 103° or 104° F., followed by a profuse sweat. This is repeated either daily or every other day with slight pyrexia in the intervals.

Chief Signs.—See page 767.

Ulcerative Endocarditis (*Malignant Endocarditis; Infective Endocarditis*).—*Characteristics*.—For days, weeks, or months the only prominent feature may be a continuous pyrexia with evening rises to 101° F., falling in the morning to 99° or 98.4° . The temperature may be as high as 103° to 105° F., markedly irregular, remittent, or intermittent, or continuously high when the course is rapid.

Chief Signs.—See page 674.

Acute Rheumatic Fever.—*Characteristics*.—The fever rises quickly and ranges from 102° to 104° F. usually. It is peculiarly irregular with marked remissions and exacerbations. Defervescence is usually gradual. The remissions are usually coincident with the profuse sweats. The temperature is reduced by salicylates unless complications ensue. Hyperpyrexia occasionally occurs.

Chief Signs.—See page 736.

Encephalitis Lethargica (*Epidemic Encephalitis*).—*Characteristics.*—Fever is present from the beginning and may last from a few days to several weeks. When the drowsiness has passed into lethargy or stupor the fever disappears.

Chief Signs.—Sudden onset; slight nasal discharge; headache; dizziness; generalized pains; sweating; later restlessness, anorexia, constipation, often vomiting, and possibly delirium at night; after a few days to two weeks, abnormal drowsiness; later, lethargy or stupor; ptosis or other cranial nerve palsy; spinal puncture (usually negative); absence of leukocytosis.

Tuberculous Peritonitis.—*Characteristics.*—Fever is a marked symptom in the acute cases and may reach 103° or 104° F. In chronic cases it is slight, about 100° F., either continuous or occurring at intervals. Frequently there is subnormal temperature.

Chief Signs.—See page 516.

Malaria (*Estivo-Autumnal Form*).—*Characteristics.*—The fever may be continuous (102° to 103° F.), with remissions more or less marked, and usually with definite paroxysms with or without chills, in which the temperature rises to 105° or 106° F. Fever persists for from one to two weeks, when there are marked remissions.

Chief Signs.—Occurrence in semi-tropical regions; presence of estivo-autumnal parasites in a smear of the blood; control with quinin.

Influenza (*La Grippe*).—*Characteristics.*—The fever is very variable and may be the only manifestation of the disease. It is sometimes markedly remittent with chills. Usually it is of short duration (three to five days), but may sometimes be protracted as a continued fever of several weeks' duration, which simulates typhoid closely. Sometimes the fever resembles that of tertian malaria.

Chief Signs.—See page 755.

Tuberculous Meningitis (*Basilar Meningitis*).—*Characteristics.*—The fever at first is slight but gradually rises to 102° or 103° F. It may be extremely irregular, changing as much as three or four degrees in one day. Toward the close it may sink to 94° or 95° F., or there may be hyperpyrexia. The entire duration is from a fortnight to three or four weeks. There are instances in which the fever does not rise much above 100° F. in the whole course.

Chief Signs.—See page 686.

Chronic Myeloid Leukemia.—*Characteristics.*—Periods of pyrexia may alternate with prolonged intervals of freedom (two-thirds of the cases). The temperature may range from 102° to 103° F.

Chief Signs.—See page 726.

Acute Miliary Tuberculosis.—*Characteristics.*—For some days the temperature may resemble that seen in typhoid fever. Usually, however, it is characterized by its greater irregularity, the remissions amounting to two or three degrees. From time to time the temperature may be inverted (higher in the morning than in the evening).

Chief Signs.—See page 392.

Acute Pneumonic Tuberculosis (*Pneumonic and Bronchopneumonic*).—*Characteristics.*—Irregular fever occurs during the course of the disease, which is usually fatal in about two months. It is of a hectic type and usually high.

Chief Signs.—See page 361.

Typhus Fever.—*Characteristics.*—The temperature rises steadily during the first four or five days with slight morning remissions. The maximum is usually attained by the fifth day, when the temperature may range from 103° to 107° F. It then generally continues with slight morning remissions until the twelfth or fourteenth day, when the crisis occurs.

Chief Signs.—See page 790.

Pernicious Anemia.—*Characteristics.*—A moderate degree of pyrexia is frequently seen which may persist for many weeks.

Chief Signs.—See page 643.

Hodgkin's Disease (*Lymphadenoma*).—*Characteristics.*—In some cases a remarkable form of pyrexia occurs. It consists of alternating periods of pyrexia and apyrexia, each of eight, ten, or twelve days' duration, lasting in all for six, nine, or twelve months. During the pyrexial period the temperature, beginning near normal, becomes day by day higher and higher, till on the fourth or fifth evening it reaches 102° or 103° F., its highest point; it gradually declines during the next four or five days to the normal, and then for three or four days it becomes increasingly subnormal till a minimum is reached, and from this point there is a gradual return to normal, when a second pyrexial curve begins. This febrile type may occur in connection with involvement of the internal glands alone.

Chief Signs.—See page 526.

Less Common Causes.—Cerebrospinal meningitis (chronic form); exophthalmic goiter (mild with maximum in the morning during crises); syphilis (secondary and tertiary stages); Malta fever; malaria (malignant); cirrhosis of the liver; erysipelas; trichiniasis; carcinoma (particularly of the liver); febricula of childhood (usually of pharyngeal origin); gonorrhea; lymphatic leukemia (rarely absent in the acute forms); tuberculous adenitis (tracheobronchial and general); renal tuberculosis; suppurative cholangitis; tularemia; *Brucella abortus* fever.

RECURRING ATTACKS OF ELEVATED

(*Recurring Pyrexia*)

Variable periods of pyrexia are separated by intervals of apyrexia.

Malaria.—*Characteristics.*—According to the type of parasite (tertian or quartan), and the number of groups of infection, the fever recurs, daily, every third day, every fourth day, or two days in succession followed by a day of apyrexia. The temperature rises from 104° to 106° F. at the maximum of the paroxysm.

Chief Signs.—See page 525.

Angiocholitis (*Intermittent Hepatic or Bilioseptic Fever; Chronic Catarrhal Cholangitis with Incomplete Obstruction of the Common Duct; Hepatic Intermittent Fever of Charcot*).—*Characteristics.*—There are recurring attacks of chill, fever, and sweats, often resembling malaria.

Chief Signs.—May be history of biliary colic; persistent jaundice of varying intensity, deepening after each paroxysm; during the paroxysm, pains in the region of the liver with gastric disturbance.

Pyelitis (*and Pyelonephritis; Pyonephrosis*).—*Characteristics.*—Intermittent fever, associated with rigors, is usually present in suppurative pyelitis. The chills

and fever may recur at regular intervals, resembling malaria. Ultimately the fever may assume a hectic type and the rigors may cease.

Chief Signs.—See page 543.

Chronic Myeloid Leukemia.—See page 814.

Hodgkin's Disease.—See page 815.

Less Common Causes.—Trench fever (relapsing fever with shin pain, due to lice); relapsing fever (three to five pyrexial periods, two weeks apart); Malta fever (undulant fever; each paroxysm shorter and the interval longer).

ELEVATION ABOVE 106° F.

(Hyperpyrexia)

Any of the fevers of microbial origin may pass into the class of hyperpyrexia; the high temperature is of little diagnostic value but of more prognostic import, usually signifying a fatal termination. Occasionally hyperpyrexia occurs in an infant or child after a convulsion without apparent cause and without serious consequence. Occurring in a neurotic individual without evidence of serious injury malingering may be suspected. Hyperpyrexia is observed commonly in the final stage of all brain affections, the temperature sometimes rising still more after death.

Pernicious Malaria.—*Characteristics.*—In the hyperpyrexial type the temperature during the paroxysm continues to rise, the patient becomes comatose and dies. This is often diagnosed as sunstroke.

Chief Signs.—See page 500.

Cerebral Hemorrhage, Pontine or Ventricular.—*Characteristics.*—The temperature, at first depressed, rises rapidly to hyperpyrexia, and death may occur within a few hours or less.

Chief Signs.—Sudden profound loss of consciousness; pin-point pupils; complete flaccid paralysis.

Fracture-Dislocation of the Cervical Spine.—*Characteristics.*—The temperature may rise to hyperpyrexia.

Chief Signs.—See page 271.

Sunstroke (Insolation).—*Characteristics.*—The temperature ranges from 107° to 110° F., or even higher.

Chief Signs.—See page 676.

Acute Rheumatic Fever.—*Characteristics.*—While rare, the fever may rise as high as 108° F., usually in the second week of the first attack, commonly associated with delirium or pericarditis. It is usually followed by stupor and death.

Chief Signs.—See page 736.

Burns.—*Characteristics.*—Extensive burns may be accompanied by hyperpyrexia after the period of reaction.

Less Common Causes.—Cerebral tumor or abscess (especially tumor of the pons); fracture of the skull (with laceration of the brain); cerebral softening; delirium tremens; uremia; acute yellow atrophy of the liver; "hysteria"; traumatic myelitis; tetanus; chorea; postbasic meningitis; erysipelas; dysentery; Malta fever; tuberculous meningitis; purulent spinal pachymeningitis; scarlet fever; septicopyemia; yellow fever; relapsing fever; acute lupus erythematosus.

SUBNORMAL

(Hypothermia)

Although the average normal temperature is 98.6° F., some individuals have a normal as low as 96° F. or occasionally 94° F. This is not uncommon in those raised in a temperate climate who have resided long in the tropics. Individuals suffering from some chronic debilitating disease usually have a subnormal temperature. In convalescence from severe febrile diseases the temperature is usually for a time subnormal. Shock and collapse (*q.v.*) from any cause have for a symptom a lowered body heat. The temperature is usually low in starvation, severe diarrheas, marasmic states, and after exposure to the cold, especially in children. Certain therapeutic measures, as the use of antipyretic drugs and cold sponging, may lower the temperature below normal temporarily.

Acute Hemorrhage.—*Characteristics.*—There is usually subnormal temperature. The most important symptoms are a falling temperature, rising pulse and increasing pallor. After a severe hemorrhage, reaction is attended by a slight rise in temperature.

Chief Signs.—See page 395.

Diabetes Mellitus.—*Characteristics.*—The temperature is often subnormal.

Chief Signs.—See page 820.

Acute Intestinal Obstruction.—*Characteristics.*—Cases of intestinal obstruction tend to pass into collapse, and when this occurs the temperature becomes subnormal.

Chief Signs.—See page 764.

Acute Alcoholism.—*Characteristics.*—The temperature is frequently below normal, particularly if the patient has been exposed to cold. Perhaps the lowest reported temperatures have been in cases of this sort (75° F.).

Chief Signs.—See page 37.

Cerebral Hemorrhage.—*Characteristics.*—The temperature may be normal, but is often found subnormal during the stage of coma. During the reactionary stage the temperature may rise slightly. In basal hemorrhage it may be high.

Chief Signs.—See page 797.

Myxedema.—*Characteristics.*—The temperature may be below normal.

Chief Signs.—See page 762.

Cretinism.—*Characteristics.*—The rectal temperature is usually subnormal. Cretins have been known to have bronchopneumonia even without fever. On account of their low temperature they are very susceptible to cold.

Chief Signs.—See page 41.

Tuberculous Peritonitis.—*Characteristics.*—In the more chronic cases subnormal temperatures are common and for days the temperature may not rise above 97° F., and the morning record may be as low as 95.5° F.

Chief Signs.—See page 516.

Less Common Causes.—Marasmus (96° or below); chronic endocarditis; chronic nephritis; opium poisoning; manic-depressive psychosis; acromegaly; prolonged anesthesia; Addison's disease; anilin poisoning; bronchial asthma; carcinoma; phenol poisoning; cerebellar tumor or abscess; cerebral tumor; cervical cord

wound; chloral poisoning; veronal poisoning; cholera; dementia præcox; general paralysis; chronic myocarditis; infantile hemoglobinuria; congenital heart disease; "neurasthenia"; oxalic acid poisoning; sclerema neonatorum (may be 70° F.); sprue; trypanosomiasis (at intervals); atropin poisoning; phosphorus poisoning.

THIRST, INCREASED

(*Polydipsia*)

Thirst is usually due to dehydration of the tissues. The common causes of temporary thirst are excessive perspiration, ingestion of salty foods, fevers, depletion of fluid by repeated vomiting, excessive diarrhea, and prolonged abstention from water. These etiological factors are quite obvious. Certain drugs cause a drying up of the secretions of the mouth with resulting thirst; these are mainly belladonna, alum, gallic acid, tannic acid, and perchlorid of iron. The history in these cases reveals the cause.

Acute Hemorrhage.—*Characteristics.*—Thirst is one of the symptoms, varying in intensity according to the amount of blood lost.

Chief Signs.—See page 395.

Diabetes Mellitus.—*Characteristics.*—Thirst is one of the most distressing symptoms, is most pronounced an hour or two after meals, and the amount of fluid consumed will be found to bear a definite relation to the quantity excreted.

Chief Signs.—See page 820.

Diabetes Insipidus.—*Characteristics.*—Increased thirst with copious secretion of urine is the prominent feature of the disease. Enormous quantities of fluid may be consumed. The thirst is proportionate to the polyuria, these being the only inconveniences of the disease.

Chief Signs.—See page 828.

Acute Gastrectasis (*Acute Dilatation of the Stomach; Gastromesenteric Ileus; Arteriommesenteric Occlusion*).—*Characteristics.*—Severe thirst occurs.

Chief Signs.—History of operation, acute fever, dietetic errors, trauma; pain; vomiting; distention of the stomach; gastric splashing; constipation with clay-colored stools; oliguria; collapse; absence of fever, leukocytosis, tenderness and rigidity (excluding peritonitis).

Chronic Dilatation of the Stomach (*Pyloroduodenal Stenosis*).—*Characteristics.*—Thirst is a prominent symptom.

Chief Signs.—Dysphagia; hunger; vomiting at intervals of large quantities of decomposing food; emaciation; oliguria; constipation; tetany; visible peristalsis; epigastric prominence; gastric analysis; x-ray.

Phosphatic Diabetes (*Essential Phosphaturia*).—*Characteristics.*—There is considerable thirst as in other diabetides.

Chief Signs.—Polyuria; emaciation; increase of excretion of phosphates, even to from 7 to 9 gms. a day; pruritus; dry skin.

Chronic Interstitial Nephritis.—*Characteristics.*—Thirst is increased, due to polyuria.

Chief Signs.—See page 832.

Less Common Causes.—Glossitis; gout; sunstroke; tetanus; xerostoma; ar-

senic poisoning; cretinism; hyperpituitarism (acromegaly, gigantism); hypopituitarism (Frölich syndrome); myxedema; chronic gastritis; neurosis; pharyngitis.

TYPHOID STATUS

This condition, of which the chief symptoms are muttering delirium or coma vigil, dry brown tongue, teeth covered with sordes, twitching of the tendons (subsultus tendinum), and possibly picking at the bedclothes or grasping at imaginary things in the air (carphologia), occurs in so many serious pathological states that its particular diagnostic significance is not great. Prognostically it usually, though not invariably, denotes an approaching exitus lethalis.

The bases of the lungs may be passively congested (hypostatic pneumonia), and ordinarily there is fever. The typhoid state is found with greatest frequency in certain infections, abdominal, and intracranial diseases.

Typhoid Fever.—*Characteristics.*—In severe cases the fourth and fifth week may show a profound aggravation of the symptoms, and the patient grows weaker, the pulse is more rapid and feeble, the tongue is dry, the abdomen is distended, and a typical typhoid status supervenes, with low muttering delirium, subsultus tendinum, and involuntary passage of feces and urine.

Chief Signs.—See page 701.

Typhus Fever.—*Characteristics.*—Typhoid status may occur in the second week. The patient lies on his back with a dull expressionless face, flushed cheeks, injected conjunctivæ, and contracted pupils. Coma vigil is frequent, in which the patient lies with his eyes open but completely unconscious, and with it there may be subsultus tendinum.

Chief Signs.—See page 790.

Septicopyemia.—*Characteristics.*—There may be marked prostration with delirium and apathy (in staphylococcus infections particularly), and usually in the rapid cases a typhoid state supervenes and the patient dies comatose.

Chief Signs.—See page 767.

Less Common Causes.—Pernicious malarial fever; malignant variola; malignant scarlet fever; epidemic influenza ("flu"); acute yellow atrophy of the liver; acute miliary tuberculosis; ulcerative endocarditis; puerperal septicemia; anthrax; glanders; hepatic abscess; appendicitis; peritonitis; chronic nephritis; pyelitis; cerebral embolism and thrombosis, with softening; lobar pneumonia; erysipelas; dysentery; obstructive jaundice; meningitis; general paresis; purpura hæmorrhagica; acute phosphorus poisoning; mumps; milk sickness; tuberculous bronchopneumonia.

URINATION, FREQUENT

(*Pollakiuria*)

(See also "Polyuria," page 828.)

In health a person micturates about five times in twenty-four hours, voiding about 1500 c.c. of urine. Ordinarily there is no waking at night to micturate. Emotion and copious liquid consumption cause it in health. Exposure to cold influences micturition, and it is notably more frequent in the winter months than in summer.

Acute Gonorrheal Posterior Urethritis.—*Characteristics.*—There is urination at very short intervals with pain, especially before and at the close of the act.

Chief Signs.—History of suspicious coitus; urethral discharge; perineal pain and tenesmus; hematuria or drops of blood at the end of urination; presence of gonococci in the smear.

Acute Cystitis.—*Characteristics.*—There is a frequent desire to pass water every few moments or almost incessantly, several times an hour or once in a couple of hours, both day and night.

Chief Signs.—Uneasiness in the neighborhood of the bladder; spasmodic pain during urination; may be fever; pressure of the bladder intolerable; may be blood-tinged urine; pyuria; may be acute retention.

Tuberculosis of the Bladder (*Primary or Secondary*).—*Characteristics.*—Increased frequency of urination is one of the common symptoms.

Chief Signs.—Hematuria, most marked at the end of urination, persistent but not profuse; microscopic sediment of red cells; bleeding irregular day or night, and not connected with jarring; pain mild at first in the penis and perineum at the close of urination; pyuria; cystitis; acid urine; history; concomitant tuberculosis (kidney, prostate, testis); tubercle bacilli in the urine; cystoscopy.

Prostatic Hypertrophy (*Prostatism*).—*Characteristics.*—There is increased frequency of urination, especially at night and particularly toward morning; later the diurnal frequency is augmented.

Chief Signs.—Middle age; hesitation in starting and weakness of the stream; may be residual urine (catheterization); cystitis; dribbling; digital exploration per rectum; cystoscopy (revealing the obstruction).

Diabetes Mellitus.—*Characteristics.*—Frequent urination with the passage of large quantities of urine is one of the cardinal symptoms.

Chief Signs.—Thirst; voracious appetite; progressive emaciation; dry tongue and skin; pruritus; urine of high specific gravity and containing sugar; hyperglycemia.

Chronic Interstitial Nephritis.—*Characteristics.*—Increased frequency in urination is present, especially nocturnal, with polyuria.

Chief Signs.—See page 832.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics.*—There is nycturia with day polyuria early, to be followed by scanty urination later.

Chief Signs.—See page 754.

Vesical Calculus.—*Characteristics.*—The frequency of urination is greater during the day and is usually not present at night unless cystitis complicates the condition.

Chief Signs.—Irresistible desire to urinate attended by tenesmus and pain at the end of the act; pain in the urethra or hypogastrium, especially on jarring; acute paroxysms ("fits of the stone"); hematuria; pyuria; vesical sound or searcher; cystoscopy; x-ray.

Renal Tuberculosis.—*Characteristics.*—At first frequency of urination with polyuria is most marked at night with pain before, during, or after the passage; later it is present in the day as well. It is usually the earliest and most constant symptom and occurs even before the bladder becomes involved.

Chief Signs.—Hematuria, usually microscopic (sometimes macroscopic), from

time to time; renal pain (may be in the healthy kidney); slight fever; pyuria (usually sterile on culture); tuberculous lesion elsewhere; tubercle bacilli in the urine; cystoscopy and ureteral catheterization; x-ray (irregular shadows).

Urethral Stricture.—*Characteristics.*—Frequency of micturition occurs with more or less pain.

Chief Signs.—History of gonorrhea (one to fifteen years previous); gleet (morning drop); small, irregular stream of urine with dribbling; imperfect and painful erection; may be retention; sometimes hematuria; passage of a sound.

Pregnancy.—*Characteristics.*—There may be some frequency from pressure, more marked in the latter half of pregnancy.

Chief Signs.—See page 502.

Uterine Fibroids (*Fibromyomata of the Uterus*).—*Characteristics.*—There may be increased frequency of urination due to pressure on the neck of the bladder.

Chief Signs.—Menorrhagia; metrorrhagia; mucous uterine discharge (leukorrhea); delayed menopause; pain; bladder and rectal pressure symptoms; anemia; vaginal examination.

Retroversion of the Uterus.—*Characteristics.*—Frequent micturition occurs from pressure of the cervix on the bladder.

Chief Signs.—See page 575.

Carcinoma of the Bladder.—*Characteristics.*—There may be frequent urination present day and night.

Chief Signs.—Middle age; hematuria, spontaneous, painless, and profuse; blood-clots, pus, mucous fragments in the urine; cystitis may develop with pain; cystoscopy.

Carcinoma of the Prostate.—*Characteristics.*—When retention occurs frequency of urination develops.

Chief Signs.—Occurrence in later life; hematuria; sciatic and pelvic pain; bony and glandular metastasis; rectal palpation (stony nodules in the gland); cystoscopy.

Nephrolithiasis (*Renal Colic*).—*Characteristics.*—Frequent micturition may occur during an attack of renal colic.

Chief Signs.—Renal colic: agonizing pain in the flank passing down the ureter to the testicles or thigh or to the back, etc.; may be nausea and vomiting, collapse, sweats, chill, fever; may be hematuria, pyuria; x-ray; ureteroscopy.

Salpingitis (*Pyosalpinx; Pelvic Peritonitis*).—*Characteristics.*—Increased irritability of the bladder is present from the adjacent inflammation.

Chief Signs.—See page 574.

Ovarian Cyst.—*Characteristics.*—There may be some frequency from pressure when the cyst is large and still in the pelvis.

Chief Signs.—See page 585.

Acute Appendicitis.—*Characteristics.*—Frequency of micturition may occur in the case of a low, inflamed appendix.

Chief Signs.—See page 679.

Less Common Causes.—Phimosis; balanitis; small urinary meatus; urethral calculus; oxaluria; urinary hyperacidity; coli bacilluria; carcinoma of the uterus (secondary infiltration of the bladder); carcinoma of the rectum (secondary infiltration of the bladder); movable kidney (torsion of); angina pectoris; ante-flexion of the uterus; diabetes insipidus; foreign body in the bladder; hydro-

nephrosis; "neurasthenia"; phosphaturia; pituitary tumor; prolapse of the uterus; chronic pyelitis; retention with incontinence; ulcer of the bladder; urethral caruncle; papilloma of the bladder; ascarides; azoturia; use of cantharides; dysentery; dysmenorrhea; fistula in ano; gout; hemorrhoids; rectal impaction; acute proctitis; prolapse of the bladder; prostatitis; spinal claudication; sunstroke; chronic trigonitis.

URINATION, PAINFUL OR DIFFICULT

Gonorrhea (Urethritis).—*Characteristics.*—The passage of urine is painful, the stream slow and obstructed in acute anterior urethritis. In acute posterior urethritis the pain is usually referred to the perineum, the anterior urethra just back of the glands, or the epigastrium, and appears before urination, in the form of urgency, during urination, and with painful spasm at the end of the act. In chronic posterior urethritis with prostatitis urination may be frequent, painful, urgent, or difficult; the stream may be slow to start or slow to terminate. In others urination may be normal.

Chief Signs.—See page 558.

Prostatic Hypertrophy (Prostatism).—*Characteristics.*—Difficulty in starting the stream is a constant symptom. Straining adds to the difficulty. As the amount of residual urine increases, or infection supervenes, urination becomes painful.

Chief Signs.—See page 820.

Urethral Stricture.—*Characteristics.*—Painful urination and frequency are frequently initial symptoms. There may be hesitation in commencing the flow or a need to strain to maintain it.

Chief Signs.—See page 821.

Acute Cystitis.—*Characteristics.*—Micturition is painful; the act terminates in a series of exquisitely painful spasms.

Chief Signs.—See page 820.

Vesical Calculus.—*Characteristics.*—Pain may be intense. The sufferer may spend his time in one long spasm. The pain is chiefly in the glans, along the pendulous urethra, and in the perineum. In a "fit of the stone" the pains are greatly intensified.

Chief Signs.—See page 820.

Renal Tuberculosis.—*Characteristics.*—The most marked and characteristic pain is terminal, continuing for some time after the end of micturition. This is due to bladder involvement.

Chief Signs.—See page 820.

Phimosis.—*Characteristics.*—The opening in the prepuce may be so small as to interfere with the passage of urine.

Chief Signs.—Inability to retract the prepuce over the glans; small preputial orifice.

Urethral Caruncle.—*Characteristics.*—Exquisite pain occurs during micturition.

Chief Signs.—Occurrence in women; examination of the urethral orifice (red, fragile tumor, size of a pea, at or within the meatus); may be vesical irritability.

Uterine Fibroids (*Fibromyomata of the Uterus*).—*Characteristics*.—Dysuria, vesical tenesmus, and frequency may occur from pressure on the bladder.

Chief Signs.—See page 821.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics*.—Difficulty in emptying the bladder may be an initial symptom. Incontinence occurs in a later stage.

Chief Signs.—See page 619.

Less Common Causes.—Balanitis; urethral calculus; foreign body in the urethra; pelvic peritonitis; pyelitis; sacro-iliac disease; tuberculous urethra; urethral chancre; urinary hyperacidity; appendiceal abscess; prostatic calculus; carcinoma of the bladder; carcinoma of the prostate; carcinoma of the cervix; compression myelitis; concussion of the spinal cord; renal irritation (cantharides, turpentine, etc.); dysentery; dysmenorrhea; inflamed hemorrhoids; lithemia; acute endometritis; myelitis; nervousness; ovarian cyst; diaphragm paralysis; perineal abscess; phosphaturia; polypus of the bladder; prolapse of the uterus; proctitis; tumor of the bladder; ulcer of the bladder; vulvitis; variola; varicella; cystocele; trigonitis.

URINE, BLOOD IN

(Hematuria)

Hematuria occurs as a symptom of prostatic, bladder, urethral, ureteral, and renal diseases, and in many systemic diseases. It may be microscopic or macroscopic. Its presence always calls for careful examination of the genito-urinary system.

Acute Parenchymatous Nephritis (*Acute Bright's Disease*).—*Characteristics*.—The urine is highly colored and contains blood, albumin, and casts. Usually the blood is microscopic.

Chief Signs.—See page 659.

Renal Tuberculosis.—*Characteristics*.—Hematuria is a common symptom; it may be microscopic or sufficient to cause smokiness of the urine, and it is sometimes massive; it frequently is present at the end of urination.

Chief Signs.—See page 820.

Nephrolithiasis (*Renal Calculus*).—*Characteristics*.—Hematuria is a constant symptom. Bleeding is seldom profuse but may be persistent and aggravated by exertion. Some hematuria usually accompanies and follows the renal colic.

Chief Signs.—See page 821.

Prostatic Hypertrophy (*Prostatism*).—*Characteristics*.—Hematuria may be profuse and may occur early in the disease.

Chief Signs.—See page 820.

Acute Gonorrheal Posterior Urethritis and Prostatitis.—*Characteristics*.—Hematuria often occurs and may be constant or intermittent. The amount is not great and the bleeding comes often with the last jet of urine.

Chief Signs.—See page 556.

Tumor of the Kidney (*Hypernephroma; Carcinoma; Sarcoma; Embryoma*).—*Characteristics*.—Hematuria is usually the first symptom in the adult (rarer in children); it is characteristically abundant, painless, spontaneous, and not influenced by motion or rest. The passage of clots may cause renal colic.

Chief Signs.—See page 527.

Tumor of the Bladder (*Carcinoma; Papilloma*).—*Characteristics.*—Hematuria is the first, last, and frequently the only symptom; it begins without cause or warning, continues copious and painless, is unaffected by rest, diet, or medication, and ceases without apparent reason.

Chief Signs.—See page 556.

Renal Infection (*Pyelitis; Pyelonephritis; Pyonephrosis*).—*Characteristics.*—Microscopic hematuria may occur, and is rarely profuse, though in chronic pyelitis, especially of the granular type, excessive bleeding may occur as the result of congestion and rupture of small new-formed vessels.

Chief Signs.—See page 543.

Carcinoma of the Prostate.—*Characteristics.*—Hematuria may occur but is usually late and not as common as in simple prostatism.

Chief Signs.—See page 821.

Chronic Parenchymatous Nephritis (*Chronic Bright's Disease*).—*Characteristics.*—Microscopic hematuria with abundant hyalin and granular casts is the usual finding. Hematuria may be a symptom of a rare form of hemorrhagic diathesis occurring in chronic nephritis. In this case profuse hemorrhage may occur into and from many parts of the body.

Chief Signs.—See page 659.

Acute Cystitis.—*Characteristics.*—The urine usually contains some blood, which may be mixed throughout the urine or may be terminal with a few drops of almost pure blood coming at the end of the urinary stream.

Chief Signs.—See page 820.

Vesical Calculus.—*Characteristics.*—Light hematuria may occur, usually as a few drops in the terminal urine. Jolting may result in profuse, short-lived hematuria.

Chief Signs.—See page 820.

Hydronephrosis.—*Characteristics.*—Hematuria is an unusual but striking feature of some cases. The hemorrhage may be repeated and profuse, especially in the intermittent or infected varieties.

Chief Signs.—See page 543.

Polycystic Kidney.—*Characteristics.*—Hematuria may recur at intervals for years.

Chief Signs.—Bilateral renal tumor (if in an adult); signs of chronic interstitial nephritis (pallor, arteriosclerosis, hypertrophy of the heart, polyuria); pain.

Trauma.—*Characteristics.*—Hematuria may occur from injury to the kidney, often slight trauma, or ruptures. The bladder may also be injured, causing hematuria. Trauma of the urethra is also a cause of hematuria at times.

Chief Signs.—History.

Ureteral Calculus.—*Characteristics.*—Hematuria may occur either during descent of the stone or when the latter becomes arrested in the duct without causing complete obstruction.

Chief Signs.—History of pain (renal colic) or passage of calculi; increased desire to micturate; ureteral catheterization; x-ray.

Foreign Bodies in the Bladder or Urethra.—*Characteristics.*—Traumatic bleeding may occur.

Chief Signs.—History of entrance; cystoscopy.

Renal Infarction.—*Characteristics.*—Hematuria may occur in cases of infective and recurring endocarditis from embolism followed by kidney infarction.

Chief Signs.—Presence of infective endocarditis; sudden pain in the loin.

Intrapelvic Papilloma.—*Characteristics.*—Hematuria is common, profuse, and may be accompanied by renal colic from passage of clots.

Chief Signs.—Renal colic; ureteral catheterization; pyelography.

Oxaluria.—*Characteristics.*—Slight hematuria may occur.

Chief Signs.—Presence of large quantities of oxalates in the urine; negative x-ray.

Purpura Hæmorrhagica.—*Characteristics.*—Blood may be present in the urine and is occasionally profuse and persistent.

Chief Signs.—Recurring attacks of purpura, urticaria, erythema, angioneurotic edema, and visceral hemorrhages; absence of blood changes; may be joint symptoms (purpura rheumatica); may be albumin and casts in the urine as well as blood.

Hemophilia.—*Characteristics.*—Hematuria may occur, usually slight but persistent and following an accident causing slight trauma of the kidney. Death has occasionally occurred from the renal hemorrhage of hemophilia.

Chief Signs.—Hereditary (only in males through the female); delayed coagulation time of the blood; repeated prolonged hemorrhages on slight provocation, commencing in infancy.

Polycythemia Rubra Vera (Erythremia).—*Characteristics.*—Hematuria may occur from vascular engorgement and may be the only symptom noted before examination.

Chief Signs.—Cyanosis; enlarged spleen; great increase in the red blood-cells.

Chronic Myeloid Leukemia.—*Characteristics.*—Hematuria sometimes occurs due to decrease in blood platelets, myeloid metaphasia in the kidneys, and enlargement of the lymph-nodes causing venous engorgement.

Chief Signs.—See page 524.

Lymphatic Leukemia.—*Characteristics.*—Hematuria may occur in the chronic form due to decrease in blood platelets, lymphatic infiltration and venous congestion from large lymph nodes. It may be marked and accompanied by intense pain.

Chief Signs.—See page 726.

Essential Renal Hematuria.—*Characteristics.*—This name is given to a unilateral hematuria for which no cause can be demonstrated. The bleeding is profuse and comes on suddenly without apparent cause. The hematuria is intermittent. These cases are all probably due to a unilateral nephritis or a blood dyscrasia.

Chief Signs.—Absence of the usual symptoms of kidney disease; ureteral catheterization, revealing the unilateral origin; negative pyelography.

Less Common Causes.—Pernicious anemia; Hodgkin's disease (paroxysms of pain and hematuria from encroachment of glands on the genito-urinary tract); lymphosarcoma (paroxysms of pain and hematuria from growths in the kidney or prostatic gland); diphtheria; influenza; aplastic anemia; injections of peptone; simple symptomatic purpura; familial hematuria; typhoid fever; typhus; scarlet fever; smallpox; diphtheria; dysentery; yellow fever; cerebrospinal fever; ictero-hemorrhagic spirochetosis; acute and subacute endocarditis; septicemia; focal in-

fection (especially those adjacent to the genito-urinary tract); appendicitis; pelvic abscess; pyosalpinx; intestinal tuberculosis; pericystitis; perinephritic abscess; aseptic infarction of the kidney (from valvular heart disease); eclampsia; urotropin, phosphorus, quinin, coal-tar drugs, salicylic acid derivatives (in excess); paroxysmal hematuria; carcinoma of the uterus, vagina, rectum, colon (infiltrating the bladder); angioma of the renal pelvis; simple cysts of the kidney; echinococcus cysts of the kidney; psorospermiasis; ulcer of the bladder; diverticulum of the bladder; exstrophy of the bladder; cystitis cystica; syphilis of the bladder; tabes dorsalis; aneurysm of the abdominal aorta; extrarenal tumor (pressing on the renal pedicle); suprarenal tumor; scurvy; malaria (blackwater fever); acute yellow atrophy of the liver; irritating drugs (turpentine, cantharides, carbolic acid).

URINE, DIMINUTION IN AMOUNT OF

(*Oliguria and Anuria*)

The urine is scanty in most of the febrile diseases. In dehydrating conditions, as diarrhea and vomiting, it is also scanty.

Acute Parenchymatous Nephritis (*Acute Bright's Disease*).—*Characteristics*.—The urine is scanty, highly colored, and contains blood, albumin, and tube casts.

Chief Signs.—See page 659.

Chronic Parenchymatous Nephritis (*Chronic Bright's Disease*).—*Characteristics*.—The urine is usually diminished in quantity, averaging 500 c.c. or less in twenty-four hours. It is smoky, and contains abundant albumin, red and white blood corpuscles, epithelial cells, and hyaline, epithelial, granular, and fatty casts. The specific gravity is high (1.025 to 1.040).

Chief Signs.—See page 659.

Nephrosis.—*Characteristics*.—The quantity of urine in the stage of the formation and maintenance of edema is markedly diminished; less than 500 c.c. in twenty-four hours is not infrequent. During the stage of elimination of edema the quantity is increased.

Chief Signs.—See page 659.

Uremia.—*Characteristics*.—The urine is scanty, or there may be anuria.

Chief Signs.—See page 684.

Cardiac Decompensation (*Heart-Failure*).—*Characteristics*.—The urine is scanty, high-colored, and contains a small amount of albumin when decompensation is marked.

Chief Signs.—See page 754.

Floating Kidney.—*Characteristics*.—The urine is scanty during Dietl's crisis, and contains an excess of urates and oxalates; sometimes it is bloody.

Chief Signs.—See page 829.

Chronic Gastritis.—*Characteristics*.—The urine is often scanty, high-colored, and contains deposits of heavy sediment of urates.

Chief Signs.—See page 467.

Dilatation of the Stomach.—*Characteristics*.—The urine is scanty, with constipation and extreme dryness of the skin, as a consequence of the small amount of fluid which passes from the stomach.

Chief Signs.—See page 818.

Lead Colic.—*Characteristics.*—The urine is often scanty during the attack.

Chief Signs.—See page 679.

Acute Intestinal Obstruction.—*Characteristics.*—The urine is scanty and high-colored and there may be suppression, particularly when the obstruction is high up in the bowel.

Chief Signs.—See page 678.

Acute General Peritonitis.—*Characteristics.*—The urine is usually scanty and high-colored, and contains a large amount of indican.

Chief Signs.—See page 516.

Nephrolithiasis (Renal Calculus).—*Characteristics.*—Complete anuria may develop when fragments block both ureters. There may be very little discomfort.

Chief Signs.—See page 543.

Cirrhosis of the Liver (Alcoholic or Portal).—*Characteristics.*—The urine is often reduced in amount, contains urates in abundance, often a slight amount of albumin, and if jaundice is intense, tube-casts.

Chief Signs.—See page 521.

Less Common Causes.—Hydronephrosis; abdominal aneurysm; abdominal tumor; ascites (late); embolism of the kidney; gout; hemorrhage; melancholia; pleurisy with effusion; pneumothorax; portal obstruction; thrombosis of the inferior vena cava or renal vein; pernicious malaria; polyarteritis acuta nodosa; renal abscess; pernicious anemia; poisoning by turpentine, potassium chlorate, chloroform, cantharides, phenol, bichlorid of mercury, phosphorus, etc.; pyonephrosis; suppurative pyelonephritis; shock; sunstroke; acute yellow atrophy of the liver.

URINE, INCONTINENCE OF

(Enuresis)

True or passive incontinence of urine is the involuntary escape of urine from the bladder, the urine flowing out as soon as it flows in, the bladder never being distended. Active incontinence is due to exaggeration of the vesical reflex and is usually called enuresis. The incontinence of retention is the overflow of a distended bladder and the causes are listed under retention of urine (*q.v.*). Imperative urination, coming on every few minutes, and due to inflammation or other form of irritation, is sometimes called false incontinence. In various states of coma (as in apoplexy) there may be incontinence. Rarely fright may cause it.

Enuresis in Children.—*Characteristics.*—The child five or six years old begins to wet the bed quite regularly, perhaps two or three times every night. He may lose urine involuntarily by day, or very rarely the incontinence occurs only by day and not by night.

Chief Signs.—May be presence of reflex irritation (phimosis, pin-worms, adenoids, hypertrophied tonsils, etc.); nervous temperament.

Cystocele.—*Characteristics.*—Frequency of urination with leakage may be very annoying.

Chief Signs.—History of perineal laceration; inability to empty the bladder completely; sensation of weight and pressure in the pelvis; protrusion of the anterior vaginal wall through introitus on walking, standing, or straining.

Tuberculosis of the Bladder.—*Characteristics.*—Incontinence occurs when the bladder neck is involved.

Chief Signs.—See page 820.

Postprostatectomy Enuresis.—*Characteristics.*—Incontinence may follow any operation upon the prostate or bladder neck, more often as a result of perineal prostatectomy.

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—In females difficulty in retaining urine may be an early symptom (in males hesitancy in passing it is more common).

Chief Signs.—See page 832.

Less Common Causes.—Ataxic paraplegia; cystitis; enuresis ureterica; epilepsy (during seizure); general paresis (in late stages of dementia); Erb's spinal paralysis; encephalitis lethargica (in the lethargic period); poliomyelitis (dribbling of urine may persist for a time); cerebrospinal meningitis; oxaluria; phosphaturia; spina bifida; hematomyelia; meningeal hemorrhage; fibroma uteri; trigonitis; uterine displacements; persistence of infantile incontinence.

URINE, INCREASE IN AMOUNT OF

(Polyuria)

Polyuria must be distinguished from frequency of urination. The total amount voided in twenty-four hours should be measured in case of doubt. Copious drinking, imbibition of diuretic fluids, and nervousness will cause transient polyuria. Convalescence from febrile illnesses and the disappearance of general edema and serous effusions may be accompanied by polyuria.

Diabetes Mellitus.—*Characteristics.*—The urine is increased in amount, varying from three or four liters to twenty or fifty in twenty-four hours. This is one of the cardinal symptoms.

Chief Signs.—See page 820.

Chronic Interstitial Nephritis (*Small Contracted Kidneys*).—*Characteristics.*—Polyuria is common, associated with nocturnal frequency.

Chief Signs.—See page 832.

Intermittent Hydronephrosis.—*Characteristics.*—The passage of a large quantity of clear fluid occurs from time to time with the sudden disappearance of the tumor in the loin.

Chief Signs.—See page 829.

Diabetes Insipidus.—*Characteristics.*—A copious secretion of urine, with increased thirst, is the prominent feature of the disease. The amount voided in twenty-four hours may range from twenty to forty pints or more. Copious drinking as the cause of polyuria should be eliminated by restriction of intake.

Chief Signs.—Urine of low specific gravity without sugar or albumen and with the normal amount of solids; polydipsia; may or may not be signs of cerebral lesion.

Polycystic Kidneys.—*Characteristics.*—The urine is abundant, of low specific gravity, and contains hyaline and granular casts.

Chief Signs.—See page 824.

Arteriosclerosis.—*Characteristics.*—The amount of urine may be increased with transient albuminuria, and now and then hyaline casts.

Chief Signs.—See page 831.

Neurosis (*"Hysteria"*).—*Characteristics.*—The amount of urine voided may be enormous, but the polyuria is always transitory.

Chief Signs.—See page 738.

Typhoid Fever.—*Characteristics.*—Polyuria is common, usually occurring during convalescence, but occasionally it occurs suddenly in the second week at the height of the fever.

Chief Signs.—See page 701.

Floating Kidney.—*Characteristics.*—The amount of urine passed is abundant following Dietl's crisis (really intermittent hydronephrosis). In the crises there is sudden pain in the renal region radiating down the ureter, with chill, fever, nausea, vomiting and collapse. The urine may be scanty or bloody. A tumor rapidly forms from dilatation of the pelvis of the kidney. After the attack this tumor disappears with the passage of the urine.

Chief Signs.—Pain in the lumbar region or a sense of dragging or discomfort; "neurasthenic" symptoms; dyspepsia; palpation of the movable kidney.

Phosphatic Diabetes (*Essential Phosphaturia*).—*Characteristics.*—Polyuria is present.

Chief Signs.—Thirst; emaciation; great increase in the excretion of phosphates (seven to nine grams daily).

Bronchial Asthma.—*Characteristics.*—Polyuria may occur after an attack of dyspnea.

Chief Signs.—See page 391.

Amyloid Disease (*Lardaceous or Waxy Kidneys*).—*Characteristics.*—The existence of polyuria with a large amount of albumen in the urine and few casts is suspicious of amyloid disease, or even the passage of a large quantity of clear urine without albumin in the presence of a chronic suppurative disease.

Chief Signs.—Association with syphilis, prolonged suppuration, disease of the bone, or tuberculosis; enlarged liver and spleen.

Epilepsy.—*Characteristics.*—Polyuria often follows an attack of grand mal and sometimes occurs with petit mal. Albumin is not infrequently present.

Chief Signs.—See page 684.

Migraine (*Hemicrania; Sick Headache*).—*Characteristics.*—Polyuria may occur after an attack.

Chief Signs.—See page 6.

Acromegaly.—*Characteristics.*—Polyuria may occur, commonly in the earlier stages, and suggesting diabetes insipidus.

Chief Signs.—See page 800.

Myxedema.—*Characteristics.*—Polyuria may occur, suggestive of diabetes insipidus.

Chief Signs.—See page 697.

Less Common Causes.—Anemia; angina pectoris (following the attack); chorea; chlorosis; azotic "diabetes"; hypopituitarism; tabes dorsalis; malaria (cold stage); meningitis (gummatous); "neurasthenia"; paralysis agitans; pregnancy; renal tuberculosis; cerebellar, medullary, or spinal tumor.

URINE, RETENTION OF

Retention of urine is the gradual accumulation of urine in the bladder with distention and inability to pass it. The symptoms are pain, intense desire but inability to urinate, and frequent straining efforts. The bladder is seen to be distended and continues to distend until some urine is forced through the obstruction (if present), or through the sphincter (in non-obstructive retention), producing incontinence (the incontinence of retention). If the urine cannot escape, back pressure is exerted, causing suppression of urine. A form of retention sometimes met with is due to reflex inhibition of the expulsor muscles or reflex stimulation of the bladder sphincter, and is seen following surgical operations, particularly upon the rectum, and following labor.

Prostatic Hypertrophy (*Prostatism*).—*Characteristics*.—Acute retention may occur early in the disease from congestion of the enlarged gland, or later, due to actual obstruction of the urethra by a localized enlargement.

Chief Signs.—See page 820.

Urethral Stricture.—*Characteristics*.—Acute retention occurs from acute congestion of the mucous membrane at the site of the stricture after exposure to cold or indulgence in alcohol, and may be the only prominent symptom.

Chief Signs.—See page 821.

Carcinoma of the Prostate.—*Characteristics*.—Retention of urine, showing itself by frequency of urination or acute complete retention quite comparable to that of simple prostatism, is often the first symptom.

Chief Signs.—See page 821.

Tabes Dorsalis (*Locomotor Ataxia*).—*Characteristics*.—Painless distention and retention are common; they are due to paralysis of the bladder and may be one of the first symptoms.

Chief Signs.—See page 619.

Neurosis ("Hysteria").—*Characteristics*.—Retention is more common in females in whom it is a not infrequent symptom; it is usually also associated with "hysterical" paraplegia.

Chief Signs.—See page 738.

Urethral Calculus or Foreign Body.—*Characteristics*.—Once impacted there may be complete retention, or more commonly dysuria.

Chief Signs.—See page 555.

Phimosis.—*Characteristics*.—This may be a cause of retention in infants.

Chief Signs.—See page 822.

Fracture-Dislocation of the Spine.—*Characteristics*.—Retention of urine is common from paralysis of the bladder.

Chief Signs.—See page 625.

Transverse Myelitis (*Infective; Compression; Syphilitic*).—*Characteristics*.—There is at first retention of urine, subsequently spastic incontinence.

Chief Signs.—See page 620.

Tumor of the Bladder.—*Characteristics*.—Retention may be occasionally caused by the blocking of the urethral orifice by a free portion of pedunculated tumor or by a clot.

Chief Signs.—See page 556.

Less Common Causes.—Ligature about the penis; tumor or abscess of the perineum; rupture of the urethra; tumor of the urethra; urethral abscess; congenital occlusion of the urethra; prostatitis or prostatic abscess; calculus of the prostate; fecal impaction; uterine fibromyomata; botulism; caisson disease; coma; diphtheritic paralysis; dysentery; rectal fistula; fissure in ano; acute urethritis; cerebrospinal meningitis; internal spinal meningitis; myxedema; tumor of the penis; pericystitis; general peritonitis; pelvic peritonitis; spastic paraplegia; spinal meningeal hemorrhage; spina bifida; vesical calculus; vesical tuberculosis; belladonna, opium, or cantharides poisoning.

VERTIGO

(*Dizziness; Giddiness; "Swimming in the Head"*)

Vertigo may be the most prominent symptom complained of by the patient in certain diseases, or it may be a minor one. Most authors divide the diseases in which vertigo occurs into categories, as circulatory, central, aural, ocular, toxic, gastric, and nervous. For the sake of convenience of the physician, in this work they are given in the order of incidence, the most common causes being given first.

Arteriosclerosis.—*Characteristics.*—The vertigo is of frequent occurrence, appears suddenly, is intensified by excitement or exertion, lasts a few hours, and rapidly disappears. It may be simple or associated with slow pulse and syncopal or epileptiform attacks (Adams-Stokes syndrome).

Chief Signs.—Advanced age; high blood-pressure; stiffened or tortuous arteries; increased second aortic sound; nocturnal pollakiuria; polyuria; moderate cardiac hypertrophy; cardiac disturbances; arcus senilis.

Acute Gastritis.—*Characteristics.*—Vertigo occurs in many cases but may not be more than a slight giddiness.

Chief Signs.—See page 467.

Chronic Gastritis.—*Characteristics.*—Vertigo is a marked feature in certain cases as described by Trousseau (vertigo e stomacho læso); but is not as prominent or common as he professes.

Chief Signs.—See page 467.

Nervous Dyspepsia.—*Characteristics.*—Vertigo is frequent and associated with other general nervous symptoms, of which the chief to be noted are fullness in the head, headache, inability to work, lassitude, insomnia, depression and hypochondriasis.

Chief Signs.—Pain during the period of digestion; absence of tenderness; belching; peristaltic unrest; "neurasthenic" symptoms; variability of symptoms.

Labyrinthitis.—*Characteristics.*—The vertigo is accompanied by disturbance of equilibrium, nausea and vomiting, and a nystagmus toward the affected labyrinth (but toward the sound side if the labyrinth is destroyed). The vertigo fails to disappear in recumbency or upon closure of the eyes.

Chief Signs.—Normal temperature; normal tympanic membrane (otoscopy); tinnitus with loud whistling sounds; increasing deafness; nystagmus toward the affected side with a tendency of the body to fall toward the opposite side; functional tests of the vestibular apparatus.

Cerebellar Tumor.—*Characteristics.*—The vertigo is constant even when at rest, sitting or lying down, is early in appearance, and is associated with a feeling that objects are revolving about the body or that the body itself is moving. The vertigo is entirely independent of the ataxia.

Chief Signs.—Headache; vomiting; optic neuritis; cerebellar ataxia (reeling or staggering gait); nystagmus; speech disturbances; asynergy; adiadokokinesis; variable reflexes and hypotonia; x-ray.

Cerebral Tumor.—*Characteristics.*—The vertigo occurs in attacks which seem to correspond to the periods of enlargement of the tumor; it is accompanied by indescribable feelings of confusion and feelings of uncertainty in equilibration.

Chief Signs.—Headache; vomiting of projectile type unaccompanied by nausea; optic neuritis; mental, motor, or sensory disturbances depending on the size and location of the tumor; x-ray.

Cerebral Syphilis.—*Characteristics.*—Vertigo is common and is increased by mental or physical effort.

Chief Signs.—Headache (vesperal); vomiting; irregular, unequal, or immobile pupils; variable nerve palsies; thrombotic phenomena (aphasia, paralysis); positive blood and spinal fluid Wassermann (90 per cent).

Multiple Sclerosis (*Disseminated Sclerosis; Insular Sclerosis*).—*Characteristics.*—Vertigo is one of the most frequent and earliest symptoms; it might be described as a giddiness. It often occurs in paroxysms.

Chief Signs.—Weakness, spasticity, or ataxia of the lower limbs; scanning speech; intention tremors; nystagmus; optic atrophy.

General Paresis (*General Paralysis of the Insane*).—*Characteristics.*—The vertigo occurs in the preliminary stage, and in the advanced stage as a precursor of coma, convulsions, or hemiplegia. It is transitory.

Chief Signs.—See page 100.

Eye-Strain.—*Characteristics.*—The vertigo is not severe but is persistent. It may be accompanied by all manner of reflex disturbances, as pseudochorea, habit spasm, depression, night terrors, dyspepsia, constipation.

Chief Signs.—Indistinctness or blurring of vision; brow or occipital headache; watering of the eyes; reddening or crusting of the lids; ophthalmologic examination, revealing refractive errors (especially astigmatism) or muscular weakness.

Aortic Regurgitation.—*Characteristics.*—The vertigo is accompanied by headache and a feeling of faintness on rising quickly. It is often an early symptom.

Chief Signs.—Water-hammer pulse; marked cardiac hypertrophy; diastolic aortic murmur; large pulse-pressure; may be positive Wassermann.

Neurosis (*"Neurasthenia"; Psychoneurosis*).—*Characteristics.*—Vertigo may be marked, resembling Ménière's disease; it is caused by the presence of some factor, as an odor, railway travel, riding in a carriage, etc., which has already been previously associated with vertigo.

Chief Signs.—Marked suggestibility; easy fatigue; backache; insomnia, phobias; anxieties.

Chronic Interstitial Nephritis.—*Characteristics.*—Vertigo is not uncommon and is accompanied by ringing in the ears.

Chief Signs.—High blood-pressure; arteriosclerosis; pollakiuria; polyuria; urine of low specific gravity containing a faint trace of albumin and hyaline casts.

Anemia.—*Characteristics.*—Vertigo is common.

Chief Signs.—Pallor; weakness; dyspnea on exertion; gastric and nervous symptoms; blood examination (revealing the type of anemia).

Intoxications (*Alcohol, Tobacco, Carbon Monoxid, Opium, Belladonna, Quinin, etc.*).—*Characteristics.*—Vertigo may be a prominent symptom.

Chief Signs.—The history; headache; weakness; anemia; tinnitus (in quinin poisoning); nervous symptoms.

Motor-Oculi Paralysis (*Visual Vertigo*).—*Characteristics.*—The vertigo appears as soon as the gaze is turned to the side of the paralyzed muscle and often sets in when the patient is called upon to move his eyes. It disappears at once when the paralyzed eye is covered, and there is a definite head-tilting which diminishes the vertigo.

Chief Signs.—Partial or complete immobility of the globe of the eye; diplopia; strabismus (for causes of Strabismus, see page 87).

Ménière's Disease (*Labyrinthine Hemorrhage*).—*Characteristics.*—The vertigo is such that the patient may fall but does not lose consciousness.

Chief Signs.—Sense of explosion in the ear; tinnitus; deafness immediately following on the affected side.

Less Common Causes.—Mastoiditis; ankylosis of the stapes; otosclerosis; foreign substances in the eustachian tube; ceruminosis; tabes dorsalis; aura of epilepsy; chronic hydrocephalus; encephalitis; fracture of the skull; any cerebellar disease; miner's nystagmus; laryngeal vertigo; exophthalmic goiter; Gerlier's disease; pellagra; Addison's disease; Adams-Stokes syndrome; cardiac decompensation; syndrome of the nucleus ambiguous and spinal fillet; orbital congestion; syndrome of the vestibular nuclei; seasickness; ruptured ectopic pregnancy; "traumatic hysteria"; vertigo following influenza; caisson disease; mountain sickness; enteroptosis; food-poisoning; ptomain poisoning; cerebral endarteritis; dilatation of the stomach; sunstroke; migraine; meningitis; myasthenia gravis; cranial nerve paralysis; arterial hypotension; hemorrhage; rapid rotation; swinging; cerebral thrombosis; apoplexy; hyperchlorhydria; acute catarrhal otitis media; chronic catarrhal otitis media; acute purulent otitis media.

WEAKNESS

(*Loss of Strength*)

(See also "Shock and Collapse," page 763; and "Syncope," page 811.)

Other terms signifying weakness are debility, asthenia, fatigue, lassitude, malaise, exhaustion, tiredness, languor, faintness, prostration. The patient has a feeling of languor and tires easily; there is often some shortness of breath on exertion and the movements are slow and made with evident effort. The heart sounds are weak, especially the first, and the heart quickens unduly after gentle exercise. A feeling of fatigue may be physiological after prolonged physical or mental exertion, after some form of shock to the system, violent emotion, or strain; it yields readily to rest, sleep, and removal of the cause. Weakness or asthenia occurs as a prodromal symptom of the acute infectious diseases, during the course of these diseases, and during convalescence. It is a concomitant of all forms of

dyspepsia. Overuse of tea, coffee, alcohol, and tobacco is a common cause of general debility or persistent fatigue. Diarrheas rapidly bring on fatigue. There are, however, certain diseases in which weakness is a prominent and persistent symptom, though all diseases are accompanied by a reduction of the maximum strength of the patient.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics*.—In many cases a sense of weariness with or without exertion of any kind may be the first manifestation of the disease, and very often is the only symptom complained of for many months. As the disease progresses the sense of languor and tiredness increases. Loss of strength may be out of proportion to and quite independent of loss of weight.

Chief Signs.—See page 412.

Neurosis (*"Neurasthenia"*).—*Characteristics*.—The fundamental symptom of "neurasthenia" is fatigability, both mental and physical. With this fatigability there goes a condition of irritability—irritable weakness—and inability to concentrate the attention for any length of time.

Chief Signs.—See page 832.

Effort Syndrome (*Neurocirculatory Asthenia*).—*Characteristics*.—A group of symptoms has received this designation and presents the following picture in nervous, highly strung individuals under stress of civic, military, or social relations: feeling of exhaustion, lassitude, breathlessness, precordial pain, giddiness, fainting, palpitation, headache, irritability, tachycardia, apical systolic thrill, high systolic blood-pressure, and nervous instability. The symptoms are exaggerated by effort and excitement.

Influenza.—*Characteristics*.—The profoundness of the prostration out of all proportion to the intensity of the disease is one of the most characteristic features. It is especially noticeable in the nervous form. It may last for a long time after the acute illness has subsided.

Chief Signs.—See page 755.

Heat Exhaustion.—*Characteristics*.—In the tropics and in temperate regions during protracted heat waves many persons become depressed physically and are unable to work or take nourishment.

Chief Signs.—History of previous ill-health or intemperance; giddiness; nausea; uncertain staggering gait; pallor; small pulse; weak heart action; may be unconsciousness; clammy sweat; subnormal temperature.

Paralysis Agitans (*Parkinson's Disease*).—*Characteristics*.—Loss of power is present in all cases, and may occur even before the tremor, but is not very striking, as tested by the dynamometer, until the late stages. The weakness is greatest where the tremor is most developed. There is rarely complete loss of power.

Chief Signs.—See page 41.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics*.—Weakness of the muscles is not uncommon, particularly a feeling of "giving way" of the legs. The quadriceps femoris muscles are first affected, so that the patient can with difficulty take a high step.

Chief Signs.—See page 288.

Cardiac Decompensation (*Chronic Myocarditis*).—*Characteristics*.—The milder degrees show themselves in an inability to take much exercise or to suffer

much mental work without the sense of great fatigue. The severer forms show an increasing inability to undergo slight extra exertion and the typical signs of heart failure appear.

Chief Signs.—See page 754.

Chronic Parenchymatous Nephritis (*Chronic Bright's Disease*).—*Characteristics.*—In many cases the disease sets in insidiously, and after a period of loss of strength, or failing health, or an attack of dyspepsia, the patient becomes pale, and puffiness of the eyelids or swollen feet are noted in the morning.

Chief Signs.—See page 659.

Chronic Interstitial Nephritis.—*Characteristics.*—The patient may complain of lassitude.

Chief Signs.—See page 832.

Arteriosclerosis.—*Characteristics.*—Symptoms of “neurasthenia,” including fatigability, are common.

Chief Signs.—See page 831.

Carcinoma (*Gastric, Pancreatic, Colonic, Hepatic*).—*Characteristics.*—Loss in strength in gastric carcinoma is usually proportionate to the loss of weight. One sees sometimes remarkable vigor almost to the close, but this is exceptional.

Diabetes Mellitus.—*Characteristics.*—Weakness is a common complaint.

Chief Signs.—See page 820.

Pernicious Anemia.—*Characteristics.*—Impairment of strength is usually a prominent feature, varying from slightly increased fatigability to extreme exhaustion. Such symptoms may date back for many months or for several years in their minor degrees.

Chief Signs.—See page 643.

Infantile Scurvy (*Barlow's Disease*).—*Characteristics.*—Great weakness of the back becomes manifest, and as the case proceeds asthenia is extreme and suggestive of muscular failure.

Chief Signs.—See page 34.

Addison's Disease.—*Characteristics.*—Among the other symptoms asthenia is a dominant feature. The muscular weakness is particularly characterized by lack of endurance, fatigue, and exhaustion, appearing with extreme rapidity, the patient avoiding the slightest exertion. The feelings of weakness, as a rule, precede the pigmentation. The patient may complain constantly of feeling tired.

Chief Signs.—See page 787.

Myasthenia Gravis.—*Characteristics.*—Weakness of the face and extra-ocular muscles with or without weakness of the palate or articulatory muscles is common to all cases. It is increased or brought on by fatigue and, as a rule, is worse at the end of the day. It may give rise to slurred speech, impairment of mastication and swallowing, and in some cases to diplopia. In any particular case the local incidence of weakness may be determined by the occupation. There is also super-added a general weakness and feeling of fatigue and tiredness with heaviness of the limbs and sometimes dull aching pains. There is marked weakness of the neck, shoulders, and extremities.

Chief Signs.—Electrical examination of the muscles (easy fatigue to the faradic current); ptosis, usually bilateral; may be diplopia and strabismus; open mouth

with drooping corners; difficulty in swallowing; regurgitation of fluids through the nose; nasal tone of speech.

Less Common Causes.—Chronic pyelitis; scurvy; trypanosomiasis; ileocolitis; morphinism; rheumatoid arthritis; gout; aortic regurgitation; Ménière's disease; pleurisy with effusion; tapeworm; myxedema; chlorosis; exhaustion psychosis; uremia; chronic myelogenous leukemia; Hodgkin's disease; focal infection ("neurasthenia" syndrome); pellagra; splenic anemia; cretinism; acromegaly.

WEIGHT, LOSS OF

(See also "Atrophy, Muscular," page 665; and "Cachexia," page 672.)

Loss of weight is a common symptom and complaint. In many instances the cause is obvious, as in febrile diseases, cancers, advanced tuberculosis, starvation from lack of food or from inability to swallow, and manifest errors of hygiene and diet. In other cases in which, without other definite symptoms, the patient has been losing weight, a careful study may reveal some serious ailment in its incipency or some otherwise silent or deep-seated lesion. The use of thyroid extract causes marked reduction in weight and the iodids, especially when given intravenously (sodium iodid), do likewise. In infants and children malnutrition is a common cause of loss of weight or failure to gain; excluding organic disease, the problem is one of dietetics.

Dyspepsia.—*Characteristics.*—Dyspepsia itself, whether organic or functional, may cause wasting, not so much from impairment of digestion or assimilation as from the restrictive diet imposed by the patient upon himself to alleviate his suffering.

For causes of Dyspepsia, see page 487.

Chronic Pulmonary Tuberculosis (*Phthisis*).—*Characteristics.*—Loss of weight is a prominent symptom. The loss is gradual, and if the disease is extending, progressive. It is most rapid early in the disease when the patient may lose at the rate of five or six pounds a week; and usually is in direct relation to the intensity and duration of the fever. In the later stages emaciation may be extreme.

Chief Signs.—Incipient form: Cough; persistent râles at one apex brought out by coughing; deficient expansion of one lung; slight pyrexia in the afternoon; tubercle bacilli in the sputum; x-ray.

Carcinoma (*Gastric, Pancreatic, Colonic, Rectal, Hepatic*).—*Characteristics.*—Emaciation is one of the most common features of the disease but is not always progressive, as proper dieting, relief of obstruction, and optimism may cause a temporary gain. Loss of weight may be noticed long before characteristic symptoms of cancer develop, although cachexia is a late manifestation.

Exophthalmic Goiter (*Graves' Disease*).—*Characteristics.*—Loss of weight is proportionate to the amount of increase in the rate of metabolism (as revealed by estimation of the basal metabolic rate—B.M.R.—and pulse rate). As a crisis is approached weight may be rapidly lost, sometimes as much as a hundred pounds in a few weeks or months.

Chief Signs.—See page 288.

Diabetes Mellitus.—*Characteristics.*—Loss of weight may be an early indication. In spite of the enormous amount of food the patient may consume he becomes rapidly emaciated. This loss of flesh bears some ratio to the polyuria, and when, under suitable diet, the sugar is reduced, the patient may quickly gain in flesh. Many diabetics, however, do not show marked emaciation.

Chief Signs.—See page 820.

Congenital Syphilis (*Hereditary Syphilis*).—*Characteristics.*—The infant is apt to lose steadily in weight, sometimes until a condition of extreme marasmus is reached. The features are drawn, the face is wrinkled and old looking, and the skin has a peculiar sallow color (*café au lait*).

Chief Signs.—See page 230.

Marasmus (*Infantile Atrophy; Simple Wasting*).—*Characteristics.*—The most constant symptom is a steady loss of weight until a condition of extreme wasting is reached. There is an old look, wrinkled skin, drumstick legs, prominent abdomen, hollow temples, sunken fontanelles, and bird-claw hands. Often the patient is reduced literally to skin and bone.

Chief Signs.—Anemia; subnormal temperature (96° F. or below); leaden pallor; may be general edema; indigestion; vomiting; may be thrush or bedsores; muscular rigidity.

Scurvy (*Scorbutus*).—*Characteristics.*—Loss of weight, progressive weakness, and pallor are early symptoms in the insidious onset of scurvy.

Chief Signs.—See page 199.

Anorexia Nervosa.—*Characteristics.*—Emaciation reaches a grade seen only in cancer and dysentery.

Chief Signs.—Presence of other “hysterical” manifestations; psychic depression; occasional excitement and restlessness; loss of appetite; regurgitation and vomiting; decubitus finally on the side with the thighs drawn up; skin dry and scaly; absence of an organic factor.

Tuberculous Peritonitis.—*Characteristics.*—In the subacute and chronic forms loss of weight and strength occur as the disease develops.

Chief Signs.—See page 516.

Bacillary Dysentery.—*Characteristics.*—The patients become greatly emaciated.

Chief Signs.—Sudden onset; fever; abdominal pain; frequent stools, at first mucous, then bloody; tenesmus; thirst; delirium; agglutination of dysentery bacilli by blood serum test.

Tabes Mesenterica (*Abdominal Scrofula; Mesenteric Tuberculosis*).—*Characteristics.*—The patients are puny, wasted, and anemic.

Chief Signs.—Occurrence in young children; enlarged tympanitic abdomen; diarrhea with thin, offensive stools; moderate fever; debility; possibly palpable glands.

Less Common Causes.—Tertiary syphilis; sprue; acute miliary tuberculosis; acute pneumonic phthisis; intestinal worms; psychoneurosis; acute inanition of infants; chronic suppuration; obstruction of the thoracic duct; prolonged lactation; meningitis; myelitis; pellagra; pancreatic cyst; cerebral abscess; cancer of the peritoneum (chronic ascites with progressive emaciation); tabes dorsalis; cirrhosis

of the liver; chronic alcoholism; arteriosclerosis; Addison's disease; osteo-arthritis; ankylostomiasis (stunted growth in children); amebic dysentery; Banti's disease; cholera; celiac disease; Hirschsprung's disease; chronic gastritis; infantile scurvy; lead poisoning; leukemia; Hodgkin's disease; malaria; melancholia; menopause; habitual constipation; enteritis; morphinism; mollities ossium; esophageal stenosis.

INDEX

Abdomen, 461

See also different regions as Epigastrium, Hypochondrium, etc.

distention of gaseous, 518

distention of with fluid, ascites, 515

pain in, general, 463

retracted, 528

retraction on inspiration, 529

rigidity of, general or local, 529

skin affections of, 538

skin reflexes, absence of, 534

swelling of, general, 502

swellings in wall, 505

tenderness of, general, 465

veins enlarged, 531

Abnormalities,

noted by laryngoscopy, 265

noted by ophthalmoscopic examination, 107

noted by rectal examination, 597

noted by vaginal examination, 582, 586

of attitude, 666, 693

of gait, 721

of speech, 795

of temperature, 812

Achromatopsia, 132

Acute Constipation, 678

Acute Diarrhea, 700

Acute Vomiting, including nausea, 490

Ageusia, 223

Agraphia. *See* Aphasia, 795

Alopecia, 25

Amaurosis, 129

Amblyopia, 126

Amenorrhea, 577

Amnesia, 658

Amphoric Breathing, 414

Anarthria, 795

Anasarca, 659

Anesthesia, 756

of Pharynx and Palate, 251

Angina Pectoris, 367

Anidrosis, 793

Anisocoria, 98

Ankle, pain in, 637

Ankle Clonus, 638

Anoperineal region, 590

swelling in, 597

Anorexia, 660

Anosmia, 173

Anuria, 826

Anus, itching of, 596

Aortic murmurs, 453

Aortic second sound

accentuated, 439

enfeebled, 440

Apex Beat

absent or feeble, 429

diffuse, 429

displaced, 426

forcible, 428

Aphasia. *See* Speech, disturbance of, 795

Aphonia, 261

Appetite

decreased, 660

increased, 661

perverted, 662

Arcus senilis, 83

Argyll-Robertson Pupil, 103

Arm. *See* Upper extremity, 293

Arrhythmia

cardiac, causes of, 448

cardiac, forms of, 447

Arthralgia, 736

Ascites, 515

Asymmetry

of chest, 376

of face, 52

Ataxia, 662

Athetosis, 745

Atrophy

of lower extremity, bilateral, 629

of lower extremity, unilateral, 628

of upper extremity, whole or part, 317

of muscles, general, 665

of optic nerve, 112

of testicle, 564

of tongue, 216

Attitude, abnormalities of, 666, 693

Axilla

enlarged glands of, 300

skin affections of, 301

swelling in, 299

Babinski's Sign, 650

Back and Spine, 539

Back

pain in, 539

stiffness or rigidity of, 545

Backache, 539

Bald Patches, 26

Baldness or thin hair, 25

Bedsore, 553

"Black Eye," 64

Black Sclera, 84

Rebs, 776

- Bleeding
 - from anus, 803
 - from conjunctival vessels, 76
 - from ear, 142
 - from gums, 197
 - from lungs, 363
 - from mouth, 188
 - from nose, 167
 - from skin vessels, 789
 - from stomach, 498
 - from uterus, 572
- Blepharospasm, 72
- Blind-spots, 133
- Blindness, transient or permanent, 129
- Blinking, 72
- Blisters
 - large (Blebs), 776
 - small (Vesicles), 774
- Blood
 - See also* Bleeding
 - in pleural cavity, 425
 - in stools, 803
 - in urine, 823
- Blood-pressure.
 - differing on two sides, 671
 - high, 668
 - low, 669
- Blood-shot eye, 74
- Blue Sclera, 84
- Boils or Phlegmons, 787
- Bones
 - brittleness of, 671
 - of extremity, swelling or thickening of, 615
- Bow-legs, 636
- Brachial Monoplegia, 306
- Bradycardia, 445
- Breast
 - pain in, 382
 - swelling of, 383
- Brittle bones, 671
- Breath
 - foul, 183
 - odors of (diagnostic), 184
- Breath sounds, weak or absent, 416
- Breathing
 - amphoric and cavernous, 414
 - bronchial, 412
 - Cheyne-Stokes, 400
 - difficult (dyspnea), 391
 - irregular, 400
 - prolonged harsh expiration, 415
 - puerile or exaggerated, 415
 - slow (oligopnea), 396
 - stertorous, 399
 - stridulous, 397
 - tubular, 412
 - weak or absent breath sounds, 416
- Bronchial Breathing, 412
- Bronchophony, 418
- Buccal Cavity, 181
- Bulging, of intercostal spaces, 379
- Bulimia, 661
- Bullae, 776
- Buttocks, skin affections of, 554
- Cachexia, 672
- Cardiac Arrhythmia
 - causes of, 448
 - forms of, 447
- Cardiac dulness
 - decreased area of, 436
 - increased area of, 434
- Cardiac Hypertrophy, 437
- Cardiac Murmurs, 451
- Cardiac Sounds
 - accentuation of first sound, 439
 - accentuated second aortic, 439
 - accentuation, second pulmonic, 441
 - decreased intensity of, 438
 - enfeebled first sound, 439
 - enfeebled second aortic, 440
 - enfeebled second pulmonic, 442
 - increased intensity of, 436
 - reduplicated, 442
- Cardialgia, 460
- Cardio-respiratory murmurs, 456
- Carious teeth, 229
- Carotid artery, throbbing of, 273
- Capillary Pulsation under nail, 348
- Cataract, 107
- Cavernous Breathing, 414
- Cephalalgia, 3
- Cervical adenopathy, 282
- Cheeks
 - flapping of, 49
 - skin affections of, 170
 - swellings of, inside mouth, 203
- Chemosis or swelling of conjunctiva, 79
- Chest, 355
 - asymmetry of, 376
 - deformities of, 373
 - edema of, 381
 - enlarged veins of, 381
 - impaired mobility of, 388
 - localized swellings of, 377
 - localized tenderness of, 371
 - pain in side of, 369
 - precordial pain in, 367
 - skin affections of, 385
 - ulcers on, 379
- Cheyne-Stokes breathing, 400
- Chills, or Rigor, 673
- Choked Disk, 111
- Chromatopsia, 135
- Chronic Constipation, 679
- Chronic Diarrhea, 702
- Chronic Vomiting, 494
- Clonus, of Ankle and Foot, 638
- Cloudy Cornea, 80
- Clubbed fingers, 34
- Coated Tongue, 210
- Coccygeal region, pain in, 544

- Coitus, painful, 589
 Cold Sensation, 762
 Collapse and Shock, 763
 Collapse of Jugulars (diastolic), 275
 Collapsing Pulse, 354
 Color-Blindness, 132
 Colored Vision, 135
 Coma, 675
 Conjugate deviation of Eyes and Head, 91
 Conjunctiva, 74
 hemorrhage in, 76
 mucopurulent or purulent discharge from, 79
 redness or injection of, 74
 swelling or chemosis of, 79
 Constipation
 chronic, 679
 acute, 678
 Contraction of field of vision, 124
 Contractures, 682
 Convulsions, 684
 Choreiform Movements, 746
 Cornea, 74
 cloudy, 80
 opaque, hazy or steamy, 80
 protrusions of, 82
 ulcers of, 81
 Corneo-conjunctival reflex, abolition of, 83
 Cough, 357
 Crackling or Crepitus, 688
 of skin on pressure, 793
 Cramps, muscular, 687
 Crepitus, 688
 Cross Eye, Squint, 87
 Crusted Eyelids, 69
 Crusts and Scabs, 782
 Curvature of Spine
 Kyphosis, 548
 Lordosis, 549
 Scoliosis, 551
 Cyanosis, 689

 Deafness, 148
 Death, sudden, 692
 Decubitus, 693
 Decubitus ulcer, 553
 Defecation, pain on, 591
 Deformities
 of chest, 373
 of ear, 153
 of eyelids, 72
 of fingers, 345
 of foot, 650
 of hands, 333
 of jaw, 236
 of lips, 180
 of nose, 158
 of toes, 651
 Delirium, 694
 Dementia, 696

 Dentition
 delayed, 228
 early, 227
 Development, retarded (physical or mental), 698
 Deviation
 conjugate of eyes and head, 91
 of tongue, 222
 Diarrhea
 acute, 700
 chronic, 702
 Difficult Labor, 712
 Difficult swallowing, 256
 Difficult urination, 822
 Diminished or absent knee-jerk, 619
 Dimness of Vision, 126
 Diplopia, 118
 monocular, 121
 Discharge
 mucopurulent or purulent from conjunctiva, 79
 from ear, 141
 from navel, 534
 from nipple, 385
 from nose, mucopurulent or purulent, 164
 from nose, watery, 163
 from urethra, 558
 from urethra, fecal, 559
 from vagina, leukorrhea, 570
 Dizziness, 831
 Double Vision, 118
 in one eye, 121
 Dribbling and Salivation, 185
 Drooping of Eyelid, 61
 Drop Wrist, 326
 Drop Foot, 648
 Dropsy
 of abdomen, ascites, 515
 general, 659
 Drowsiness, 707
 Dryness
 of mouth, 187
 of throat, 240
 of skin, 793
 Dulness
 decreased cardiac, 436
 increased cardiac, 434
 on percussion, 405
 Dwarfism and Infantilism, 710
 Dysarthria. *See* Speech, disturbance of, 795
 Dysmenorrhea, 575
 Dyspareunia, 589
 Dyspepsia, 487
 Dysphagia
 with pain, 253
 without pain, 256
 Dyspnea, 391
 Dystocia, 712
 Ear, 137
 bleeding from, 142
 deformities or malformations of, 153
 discharge from, 141

Ear (cont'd)

- gangrene of, 143
- pain in, 137
- ringing in, 145
- sense of fullness in, 147
- skin affections of, 143
- swellings of, 140

Earache, 137

Ecchymosis, 789

- of conjunctiva, 76
- of eyelid, 64

Edema

- of chest, 381
- circumscribed or local, 716
- of eyelids, 65
- of one foot and leg, 644
- generalized, 659
- of lower extremities, bilateral, 642
- of upper extremity, 305

Egophony, 418

Elbow

- skin affections of, 324
- swelling of, 321

Emesis

- acute, including nausea, 490
- chronic, 494

Emotions, alterations of, 718

Emphysema, subcutaneous, 793

Enlargement

- of kidney, 526
- of liver, 520
- of spleen, 523

Enophthalmos, 97

Enuresis, 827

Epididymis, swelling of, 563

Epigastrium

- pain in, 466
- tenderness in, 470
- swelling in, 506

Epiphora and Lacrimation, 77

Epistaxis, 167

Episternal Pulsation, 275

Erection, prolonged, priapism, 560

Eruptions. *See* Skin, affections of, 766

Erythema

- general, 766
- local, 768

Eversion of Foot, 649

Exaggerated Breathing, 415

Exaggerated Knee-Jerk, 621

Exophthalmos, 95

Expiration, prolonged and harsh, 415

Extensor Plantar Reflex, 650

Extremity

- lower, 600
- upper, 293

Eye, 61

- conjugate deviation of, 91
- fixed or immobile, 86
- pain in, 85
- prominence of or protrusion of, exophthalmos, 95

Eye (cont'd)

- sunken, enophthalmos, 97
- twitching of, nystagmus, 92

Eyebrows, skin affections of, 29

Eyelids

- crusted, 69
- darkened, 71
- deformity of, 72
- ecchymosis of, 64
- always open, 64
- ptosis of, 61
- skin affections of, 70
- spasm of, 72
- swelling of, 65
- swellings of, localized, 67
- twitching of, 72
- ulcers of, 69

Face, 29

- asymmetry of, 52
- flushed, 37, 38
- pain in, 30
- pallor of, sudden or transient, 36
- pallor or sallowness of, permanent, 31
- paralysis of, 47
- skin affections of, 56
- swelling of, general, 49
- swellings of, local, 53
- twitching or spasm of, 45
- ulcers of, 56

Facies, characteristic or peculiar, 39

Fainting, 811

Features, thickened, 51

Fecal Urethral Discharge, 559

Feces, incontinence of, 719

Feet

- enlargement of, 642
- redness of, 647

Female Genitalia, 569

Fetor Oris, 183

Fever. *See* Temperature, abnormalities of, 812

Fever Blisters, 178

Fibrillary Movements, 747

Finger Nails

- abnormalities of, 347
- skin affections of, 349

Fingers

- clubbed, 341
- deformities of, 345
- gangrene of, 343
- pain in, and hand, 327
- skin affections of, 346
- swellings of, 330

Fissured Tongue, 217

Fistulæ, in Neck, 289

Fits, 684

Fixed Eyeballs, 86

Fixed Pupils, 103

Flank, swelling in anteriorly, 511

Flapping of Cheeks, 49

Flashes of Light, 136
 Flatness, on percussion, 405
 Flushing
 of face, 37
 of face, sudden or transient, 38
 hot flashes, 721
 Foaming at mouth, 188
 Fontanels
 bulging of, 16
 delayed closure of, or enlarged, 15
 sunken, 16
 Foot
 deformities of, 650
 edema of, 644
 eversion of, 649
 gangrene of, 646
 inversion of, 649
 pain in, 639
 ulcer of, 645
 Foot Drop, 648
 Forearms, skin affections of, 338
 Foul Breath, 183
 Fracture, spontaneous, 671
 Fremitus
 friction, 404
 vocal or tactile, diminished, 403
 vocal or tactile, increased, 402
 Frequent Urination, 819
 Friction Fremitus, over Precordia, 434
 Friction Rub, 404
 Friction Sounds
 pleural, 422
 precordial, 457
 Fundus, 107

 Gait, abnormalities of, 721
 Gangrene
 of ear, 143
 of fingers, 343
 of hand, 343
 of toes or foot, 646
 Gastric Hemorrhage, 498
 General Dropsy, 659
 General Pains, 755
 General Symptoms, 655
 Genitalia, Female, 569
 external malformations, 578
 Genitalia, Male, 554
 external, anomalies of, 567
 skin affections of, 568
 Genu Valgum, 636
 Giddiness, 831
 Gingivitis, 197
 Girdle Sensation, 461
 Glands
 axillary, enlarged, 300
 inguinal, enlarged, 537
 lymphatic, generalized enlargement,
 725
 cervical, enlarged, 282
 thyroid, enlarged, 287

Goiter, 287
 Grimacing, 45
 Grinding of Teeth, 228
 Groin
 glands of, enlarged, 537
 skin affections of, 607
 swelling in, 535
 Gums
 colored line on, 196
 spongy, bleeding or ulcerated, 197
 swelling of, 200

 Hair, thin, 25
 Halitosis, 183
 Halving of Pulse Rate, 353
 Hands
 deformities of, 333
 enlargement of, 332
 gangrene of, 343
 pain in, and fingers, 327
 skin affections of, 338
 swellings of, and fingers, 330
 Hawking and Spitting, 250
 Head
 forward displacement of, 23
 spasmodic movements of, 21
 retraction of, 24
 rolling of, 20
 size and shape, abnormalities of, 12
 swellings on, 17
 tremor or shaking of, 22
 turned to one side, 23
 veins of, enlarged, 25
 Headache, 3
 frontal, 4
 general or variable, 9
 lateral, 6
 occipital, 7
 vertex, 8
 Hearing
 heightened, 152
 impaired, 148
 Heart
 friction sound over, 457
 murmurs, 451
 palpitation of, 458
 rapid, 443
 rhythm, irregularities of, 447
 Heart Sounds. *See* Cardiac Sounds, 439
 Heart-Burn, 460
 Heat Sensation, 762
 Hematemesis, 498
 Hematuria, 823
 Hemianopsia, 122
 Hemiplegia, 314
 Hemorrhage
 anal, 803
 aural, 142
 bronchopulmonary, hemoptysis, 363
 conjunctival, 76
 cutaneous, 789

- Hemorrhage (cont'd)
 gastric, hematemesis, 498
 oral, 188
 uterine, 572
 Hemoptysis, 363
 Hemothorax, 425
 Hepatomegaly, 520
 Herpes
 labialis, 178
 zoster, 387
 Hiccough, 726
 High Blood-Pressure, 668
 Hip, pain in, 602
 Hippocratic Fingers, 341
 Hippus, 103
 Hive-like Eruptions, 783
 Hoarseness, 261
 Hollow Back, 549
 Hot Flashes, 721
 Humpback, 548
 Hyperacusis, 152
 Hyperesthesia, 759
 Hyperidrosis, 810
 Hyperpyrexia, 816
 Hyperresonance, 409
 Hypertension, 668
 Hypertrophy
 cardiac, 437
 of liver, 520
 Hypochondrium
 pain in, left, 473
 pain in, right, 471
 swelling in, left, 509
 swelling in, right, 507
 tenderness in, left, 474
 tenderness in, right, 473
 Hypo-esthesia, 756
 Hypogastrium, 482
 pain in, 482
 swelling in, 514
 tenderness in, 486
 Hypotension, 669
 Hypothermia, 817
- Icterus, 732
 Iliac Region
 pain in, right or left, 476
 swelling in, right or left, 512
 tenderness in, right or left, 481
 Iliocostal Space, swelling in, 511
 Impotence, 727
 Incontinence
 of feces, 719
 of urine, 827
 Incoördination, Ataxia, 662
 Indigestion, 487
 Infantilism and Dwarfism, 710
 Inguinal Region
 pain in, right or left, 476
 glands of, enlarged, 537
 swelling in, 535
- Inguinal Region (cont'd)
 tenderness in, right or left, 481
 Injection or Redness of Conjunctiva, 74
 Insomnia, 728
 Intercoastal Spaces
 bulging or obliteration of, 379
 retraction of, 380
 Intestinal Obstruction, 678
 Intolerance to Light, 116
 Inversion of Foot, 649
 Irregular Pulse, 352
 Irregular Pupils, 98
 Itching, 730
 of anus, 596
 of throat, 240
 of vulva, 581
- Jaw
 deformities of, 236
 inability to open, 233
 lower, 231
 pain in, 231
 swellings of, 235
 Jaundice, 732
 Joints, pain in, multiple, 736
 Jugular Veins
 diastolic collapse of, 275
 engorgement of, 277
 pulsation of, 274
- Keratitis, symptomatic, 81
 Kidney, enlargement of, 526
 Knee
 pain in, 607
 skin affections of, 324
 swelling of, 610
 Knee-Jerk
 diminished or absent, 619
 exaggerated, 621
 Koplik Spots, 194
 Kyphosis, 548
- Labor, difficult, 712
 Lacrimation and Epiphora, 77
 Lagophthalmos, 64
 Laryngoscopy, abnormalities noted by, 265
 Larynx, 259
 pain in, 260
 Legs
 bow-legs, 636
 edema of, 644
 pain in one or both below knee, 631
 skin affections of, 635
 ulcers of, 634
 varicose veins of, 633
 Lengthening of one Lower Extremity, 618
 Lens, 107
 Lethargy, 707

- Leukoderma, 792
 Leukorrhea, 570
 Light
 intolerance of, 116
 flashes of, 136
 Lips, 176
 deformities of, 180
 skin affections of, 179
 swellings of, local, 177
 swollen, 176
 trembling or twitching of, 178
 ulcers of, 179
 Litten's Phenomenon, 388
 Live Flesh, 747
 Liver, enlargement of, 520
 Local Edema, 716
 Lock Jaw, 233
 Lordosis, 549
 Loss of Memory, 658
 Loss of Strength, 833
 Loss of Weight, 836
 Low Blood-Pressure, 669
 Lower Extremity, 600
 atrophy or wasting of both, 629
 atrophy or wasting of one, 628
 bones, swelling or thickening of, 615
 edema of, bilateral, 642
 lengthening of one, 618
 numbness and tingling in, 630
 paralysis of both, spastic or flaccid, 624
 paralysis of one, 623
 paralysis of lower and upper, same side,
 hemiplegia, 314
 shortening of one, 617
 Lower Jaw, 231
 Lumbago, 542
 Lumbar Region
 pain in, 542
 swelling in, anteriorly, 511
 swelling in, deep-seated, 547
 swelling in, superficial, 547
 tenderness in, 545
 Lymphatic Glands, generalized enlargement
 of, 725
- Macropsia, 135
 Macules, 770
 Male Genitalia, 554
 Mandible, 231
 Melena, 803
 Memory, loss of, 658
 Menorrhagia, 572
 Menstruation
 absence or cessation of, 577
 excessive or prolonged, 572
 painful, 575
 Mentality, changes of, 738
 Metamorphopsia, 135
 Meteorism, 518
 Metrorrhagia, 572
 Micropsia, 135
- Mitral Murmurs, 451
 Mobile Spasm, 745
 Monoplegia
 brachial, 306
 crural, 623
 Mouth, 181
 bleeding from, 188
 drawn to one side, 190
 dryness of, 187
 foaming at, 188
 inability to open, 233
 Koplik's spots in, 194
 open, 189
 pain in, 182
 petechiæ in, 195
 pigment patches in, 195
 skin affections of, 205
 swellings in floor of, 190
 swellings of roof, 204
 ulcers or white patches in, 191
 Mouth-Breathing, 189
 Movements
 athetoid, 745
 choreiform, 746
 fibrillary, 747
 myoclonic, 747
 tremulous, 748
 Mucopurulent or Purulent Discharge from
 Conjunctiva, 79
 Mucus in Stools, 806
 Murmurs
 aortic, 453
 cardiac, 451
 cardio-respiratory, 456
 mitral, 451
 pulmonic, 455
 tricuspid, 456
 Muscæ Volitantes, 133
 Muscular Atrophy, 665
 Muscular Cramps, 687
 Mydriasis, 98
 Myoclonic Movements, 747
 Myokymia, 747
 Myosis, 98
- Nail, capillary pulsation under, 348
 Nasal Voice, 751
 Nausea
 acute, 490
 chronic, 494
 Navel, discharge from, 534
 Neck, 269
 enlarged lymph glands of, 282
 pain in, 269
 sinuses in, 289
 skin affections of, 292
 swellings in, 277
 tenderness of, localized, 272
 throbbing of carotid arteries, 273
 Nictitation, 72
 Nipple, discharge from, 385

Nodules or Tubercles, 780

Nose, 154

deformities of, 158

discharge from, mucopurulent or purulent, 164

discharge from, watery, 163

obstruction of, 161

pain in, 155

redness of, 157

regurgitation of fluid through, 166

skin affections of, 170

swellings of, 158

Nosebleed, 167

Nostrils

collapse of, 160

skin affections of, 170

Numbness

in lower extremities, 630

in upper extremities, 336

Nystagmus, 92

Obesity, 752

Obstruction

intestinal, 678

of the nose, 161

Occult Blood in Stool, 803

Odors of Breath, diagnostic, 184

Oligopnea, 396

Oliguria, 826

Onychosis, 347

Opaque Cornea, 80

Open Mouth, 189

Ophthalmoscopic Findings, 107

Optic Atrophy, 112

Opisthotonos, 753

Oppression, sensation of, 762

Optic Neuritis, 111

Orthopnea, 754

Otalgia, 137

Otorrhagia, 142

Otorrhea, 141

Pain

in abdomen, general, 463

in ankle, 637

in back, 539

in breast, 382

in chest, side of, 369

on coitus, 589

on defecation, 591

in ear, 137

in epigastrium, 466

in eyeballs, 85

in face, 30

in foot or toes, 639

general, 755

in hand and fingers, 327

in hip, 602

in hypochondrium, left, 473

Pain (cont'd)

in hypochondrium, right, 471

in hypogastrium and pelvis, 482

in iliac region, right or left, 476

in inguinal region, right or left, 476

in jaw, 231

in joints, multiple, 736

in knee, 607

in larynx, 260

in leg or legs below knee, 631

lumbar, 542

during menstruation, 575

in mouth, 182

in neck, 269

in nose, 155

in penis, 555

in perineum, 594

precordial, 367

in rectum, 591

sacro-iliac or coccygeal, 544

in shoulder, 294

in or radiating from spine, 540

in sternal region, 365

on swallowing, 253

in teeth, 225

in testicle, 561

in thigh or thighs, 603

in throat, 237

in tongue, 208

in upper extremity, 301

in umbilical region, 475

unilateral, 756

on urination, 822

Palate

anesthesia of, 251

paralysis of, soft, 252

perforated, 205

swellings of, 204

Pallor

of face, permanent, 31

of face, sudden or transient, 36

Palpation

bimanual, abnormalities noted, 582

of heart, 458

Papilledema, 111

Papillitis, 111

Papules, 771

Paralysis

of face, 47

of lower extremity, one, 623

of lower extremities, both, spastic or flaccid, 624

of upper extremity, whole or part, 306

of upper extremities, both, whole or part, 311

of upper and lower extremity, same side, 314

of uvula, 252

Parageusia, 223

Paraplegia, spastic or flaccid, 624

Paresthesia, 760

- Patches
 in mouth, 191
 on skin, white, 792
 on tongue, white, 219
 on tonsils or pharynx, 245
 Patellar Reflex
 diminished, 619
 increased, 621
 Pearly Sclera, 83
 Pectoriloquy, 418
 Pelvis, pain in, 482
 Penis
 pain in, 555
 ulcer of, 558
 Percussion
 dulness or flatness on, 405
 hyperresonant or tympanitic, 409
 Perforated Palate, 205
 Perineum
 pain in, 594
 tenderness in, 595
 ulcer of, 595
 Peristalsis, visible, 532
 Petechiæ, 789
 in mouth, 195
 Pharynx, 237
 anesthesia of, 251
 Phlegmon or Boils, 787
 Photophobia, 116
 Photopsia, 136
 Pica, 662
 Pigmentation of Skin, 787
 Pigment Patches in Mouth, 195
 Pink Eye, 74
 Plantar Reflex, extensor, 650
 Pleural Effusion
 bloody, 425
 purulent, 425
 serous, 423
 Pleural Friction
 rub, 404
 sound, 422
 Pollakiuria, 819
 Polydipsia, 818
 Polyphagia, 661
 Polypnea, 391
 Polyuria, 828
 Pop Eyes, exophthalmos, 95
 Popliteal Space, swelling in, 615
 Posture in Bed, 693
 Precordia,
 abnormal pulsations of, 430
 bulging of, 377
 friction fremitus over, 434
 thrills in, 432
 Precordium
 friction sounds in, 457
 pain in, 367
 Priapism, 560
 Prickling of Throat, 240
 Proptosis, 95
 Pruritus, 730
 Pruritus (cont'd)
 ani, 596
 vulvæ, 581
 Ptyalism, 185
 Puerile Breathing, 415
 Puffiness of Eyelids, 65
 Pulmonic Area
 murmurs in, 455
 second sound, accentuated, 441
 second sound, enfeebled, 442
 Pulsation
 abnormal in precordia, 430
 episternal, 275
 of carotid, 273
 of jugular, 274
 supraclavicular, 276
 Pulse, 350
 collapsing, 354
 inequality of on two sides, 354
 irregular, 352
 rapid, tachycardia, 443
 rate, halving of, 353
 slow, bradycardia, 445
 Pupils, 98
 Argyll-Robertson, 103
 changes in size and shape of, 98
 fixed or sluggish, 103
 reflexes, abnormalities of, 103
 unequal, 98
 Purpura, 789
 Purulent or mucopurulent discharge from
 conjunctiva, 79
 Purulent Effusion, pleural, 425
 Pus in Stools, 808
 Pustules, 779
 Pyrosis, 460

 Râles, 419
 Rapid Pulse, 443
 Rectum
 abnormalities felt on palpation of, 597
 pain in, 591
 Recurring Fever, 815
 Redness or Injection of Conjunctiva, 74
 Redness
 of feet, 647
 of nose, 157
 of throat, 241
 of tonsils, 241
 Reduplication of Cardiac Sounds, 442
 Reflex
 abdominal, absent, 534
 corneo-conjunctival, abolition of, 83
 extensor plantar, 650
 patellar, diminished or absent, 619
 patellar, increased, 621
 pupillary, abnormal, 103
 throat, loss or diminution of, 251
 Regurgitation
 from stomach, 501
 of fluid through nose, 166
 Respiration. *See* Breathing.

- Retarded Development, physical or mental, 698
- Retention of Urine, 830
- Retina, spots or patches on, 114
- Retinal Hemorrhage, 109
- Retinitis, 107
- Retracted Abdomen, 528
- Retraction
of abdomen on inspiration, 529
of intercostal spaces, 380
- Rigidity
of abdomen, general or local, 529
of back, 545
general, 795
- Rigors or Chills, 673
- Ring in Ear, 145
- Risus Sardonius, 44
- Sacral Region, pain in, 544
- Sacro-iliac Region, pain in, 544
- Salivation and Dribbling, 185
- Sallowness. *See* Pallor, 31
- Sardonic Grin, 44
- Scabs and Crusts, 782
- Scales, 777
- Scalp
bald patches on, 26
skin affections of, 27
tenderness of, localized, 12
- Scapoid Abdomen, 528
- Scarred Tongue, 220
- Scarpa's Triangle, swelling in, 606
- Sclera, 74
black or slaty, 84
bright blue, 84
pearly, 83
- Scoliosis, 551
- Scotomata, 133
- Scrotum
swelling of, 564
ulcers of, 566
- Sensation
abnormalities of, 756
girdle, 461
impaired, hypo-esthesia, 756
increased, hyperesthesia, 759
in ear, fullness, 147
in larynx, abnormal, 260
in lower extremities, numbness and tingling, 630
in testicle, loss of, 562
in upper extremities, numbness and tingling, 336
perverted, paresthesia, 760
- Sensation Subjective of heat, cold, throbbing, oppression, etc., 762
- Serous Effusion, pleural, 423
- Shingles, 387
- Shock and Collapse, 763
- Shortening of one Lower Extremity, 617
- Shoulder
elevation or depression of, 298
pain in, 294
swelling of, 297
- Sinuses in Neck, 289
- Skin Affections
of abdomen, 538
of axilla, 301
of buttocks, 554
of chest, 385
of ear, 143
of elbow, 324
of eyebrows, 29
of eyelids, 70
of face, 56
of finger nails, 349
of fingers, 346
of forearms and hands, 338
of knee, 324
of legs, 635
of lips, 179
of male genitalia, 568
of mouth, 205
of neck, 292
of nostrils, nose and cheeks, 170
of scalp, 27
of thighs and groins, 607
of vulva, 580
- Skin
crackling on pressure, 793
dryness of, 793
hemorrhages into, 789
pigmentation of, 787
thickening or induration of, 794
white patches on, 792
- Skin, Lesions of, 766
boils or phlegmon, 787
bullæ, 776
crusts and scabs, 782
erythema, general, 766
erythema, local, 768
macules, 770
nodules or tubercles, 780
papules, 771
pustules, 779
scales, 777
ulcers, 784
vesicles, 774
wheals, 783
- Sleeplessness, 728
- Slow Heart, bradycardia, 445
- Sluggish Pupils, 103
- Smell, loss of, 173
- Sneezing, 174
- Somnolence, 707
- Sore Mouth, 182
- Sore Throat, 237
- Sore Tongue, 208
- Spasm
Mobile, Athetosis, 745
of eyelids, 72
of face, 45

- Spasm (cont'd)
 of tongue, 221
 Spasticity, general, 795
 Speculum Examination, vaginal, abnormali-
 ties noted, 586
 Speech, disturbances of, 795
 Spine and Back, 539
 Spine
 kyphosis of, 548
 lordosis of, 549
 pain in or radiating from, 540
 scoliosis of, 551
 tenderness in, localized, 552
 Spleen
 enlargement of (splenomegaly), 523
 Spongy Gums, 197
 Spontaneous Fracture, 671
 Sputum, characteristics of, 357
 Squint, 87
 Stature, tall, 800
 Sterility
 in female, 800
 in male, 802
 Sternal Region, pain in, 365
 Sternutation, 174
 Stertorous Breathing, 399
 Stiff Neck, 269
 Stiffness of Back, 545
 Stools
 blood in, 803
 mucus in, 806
 pus in, 808
 Strabismus, 87
 Strength, loss of, 833
 Stridor, 397
 Stridulous Breathing, 397
 Stupor, 707
 Subcutaneous Emphysema, 793
 Subnormal temperature, 817
 Succussion Sound, 423
 Sudden Death, 692
 Sunken Eyeballs, 97
 Supraclavicular Pulsation, 276
 Sutures
 delayed closure, 17
 premature closure, 17
 Swallowing
 difficult, 256
 painful, 253
 Sway Back, 549
 Sweating
 diminished, 793
 excessive, general, 810
 excessive, partial, 809
 Swelling or Swellings
 of abdomen, general, 502
 in abdominal wall, 505
 in ano perineal region, 597
 in axilla, 299
 of bones of extremities, 615
 of breasts, 383
 of cheeks, inside mouth, 203
 of conjunctiva, 79
 of chest, localized, 377
 of the ear, 140
 of elbow, 321
 in epigastrium, 506
 of eyelid, 65
 of eyelids, localized, 67
 of face, general, 49
 of face, local, 53
 of gums, 200
 of hand and fingers, 330
 in left hypochondrium, 509
 in right hypochondrium, 507
 in hypogastrium, 514
 in iliac region, right or left, 512
 in inguinal region, 535
 of jaw, 235
 of knee, 610
 of lips, 176
 local of lips, 177
 in flank or lumbar region anteriorly, 511
 in lumbar region, deep seated, 547
 in lumbar region, superficial, 547
 in floor of mouth, 190
 in neck, 277
 of nose, 158
 of palate, 204
 of pharynx, 247
 in popliteal space, 615
 in Scarpa's triangle, 606
 of scrotum, 564
 of shoulder, 297
 of testicle, 563
 of tongue, 213, 215
 of tonsils, 243
 in umbilical region, 509
 of vulva, 578
 of wrist, 324
 Symptomatic Keratitis, 81
 Symptoms, general, 655
 Syncope, 811
 Tachycardia, 443
 Tactile Fremitus
 diminished, 403
 increased, 402
 Tall Stature, 800
 Taste, loss, impairment or perversion of,
 223
 Tears, excessive secretion of, lacrimation, 77
 Teeth, 225
 abnormal shape and structure of, 230
 caries, 229
 grinding of, 228
 pain in, 225
 Temperature
 abnormalities of, 812
 above 106° F. hyperpyrexia, 816
 elevation over ten days, 813
 recurring attacks, 815
 subnormal, 817

Tenderness

- of abdomen, general, 465
- in chest, localized, 371
- in epigastrium, 470
- in hypochondrium, left, 474
- in hypochondrium, right, 473
- in hypogastrium, 486
- in iliac and inguinal region, right or left, 481
- in lumbar region, 545
- in neck, 272
- in perineum, 595
- of spine, localized, 552
- of testicle, 562
- in umbilical region, 476
- rectal, 591

Testicle

- atrophy of, 564
- loss of sensation in, 562
- pain in, 561
- swelling of, 563
- tenderness of, 562

Thickening

- of bones of lower extremity, 615
- of features, 51
- of skin, 794

Thighs

- pain in, 603
- skin affections of, 607

Thirst, increased, 818

Thrills in Precordia, 432

Throat, 237

- anesthesia of, 251
- dryness of, 240
- itching, tickling or prickling of, 240
- mucus accumulation in, 250
- pain in, 237
- redness of, 241
- swellings of, 247
- ulcers of, 249
- white or gray patches on, 245

Throbbing Sensation, 762

Thyroid Gland, enlargement of, 287

Tickling of Throat, 240

Tingling in Lower Extremities, 630

Tinnitus Aurium, 145

Toes

- deformities of, 651
- gangrene of, 646
- pain in, 639

Tongue, 207

- atrophy of, 216
- bright red, 212
- coated, 210
- deviation of, 222
- fissured, 217
- inability to protrude, 222
- pain in, 208
- scarred, 220
- swellings of, 215
- swollen, 213
- ulcers of, 217

Tongue (cont'd)

- tremor or spasm of, 221
- white patches on, 219

Tonsils

- redness of, 241
- swollen, including neoplasms, 243
- ulcers of, 245

Toothache, 225

Tracheal Tugging, 291

Tremor, 748

- of lips, 178
- of tongue, 221

Tricuspid Murmurs, 456

Trismus, 233

Tubercles or Nodules, 780

Tubular Breathing, 412

Twitching

- of eyeballs, 92
- of eyelids, 72
- of face, 45
- of lips, 178

Tympanites, 518

Tympany on Percussion, 409

Typhoid Status, 819

Ulcers, 784

- decubitus, bed sore, 553
- on chest, 379
- of cornea, 81
- of eyelids, 69
- of face, 56
- of foot, 645
- of gums, 197
- of leg, 634
- of lips, 179
- in mouth, 191
- of penis, 558
- of perineum, 595
- of scrotum, 566
- of throat, 249
- of tongue, 217
- of tonsils, 245
- of vulva, 579

Umbilical Region

- pain in, 475
- swelling in, 509
- tenderness in, 476

Unconsciousness, 675

Unequal Pupils, 98

Upper Extremities

- atrophy or wasting of, whole or part, 319
- numbness and tingling in, 336
- paralysis of, whole or part, 311

Upper Extremity, 293

- atrophy or wasting of, whole or part, 317
- edema of, 305
- pain in, 301
- paralysis of, whole or part, 306
- paralysis of upper and lower, same side, hemiplegia, 314

Uterus, bleeding from, 572

Urethra, fecal discharge from, 559

Urination

frequent, 819

painful or difficult, 822

Urine

blood in, 823

diminution of, 823

incontinence of, 827

increase of, 828

retention of, 830

Uvula

abnormalities of, 259

paralysis of, 252

Vagina

abnormalities noted, digital examination,
582

discharge from, leukorrhea, 576

speculum examination of, abnormalities
noted, 586

Varicose Veins of Legs, 633

Veins

enlarged of abdominal wall, 531

enlarged of chest, 381

varicose of leg, 633

Vertigo, 831

Vesicles, 774

Visible Peristalsis, 532

Vision, 116

contraction of field, 124

Vision (cont'd)

dimness of, 126

Vocal Fremitus

diminished, 403

increased, 402

Vocal Resonance Increased, bronchophony,
418

Voice, nasal, 751

Vomiting

acute, including nausea, 490

of blood, 498

chronic, including nausea, 494

Vulva

itching of, 581

skin affections of, 580

swelling of, 578

ulcer of, 579

Wasting. *See* Atrophy, 628

Weakness, 833

Weight, loss of, 836

Wheals, 783

White Patches

on skin, 792

on tongue, 219

Wrist, swelling of, 324

Wrist Drop, 326

Zona, 387

Zoster, 387

Surgical Monographs

THE monographic form of presenting a subject is today more than ever before commending itself to the active man in practice, especially surgical practice, because of the definiteness, fullness, and clarity with which a subject can be handled. There is here presented a series of surgical monographs prepared by eminent authorities who have come to be recognized exponents of the subjects on which they write. The following volumes are now ready for delivery and others are in process of publication. The ten now ready are:

SURGERY OF THE STOMACH AND SMALL INTESTINES. By J. SHELTON HORSLEY, M.D., *Surgeon to St. Elizabeth's Hospital, Richmond, Virginia.*

PERITONITIS. By J. GARLAND SHERRILL, A.M., M.D., *former Professor of Surgery, Kentucky University, Medical Department.*

THE COLON. By FRED W. RANKIN, A.M., M.D., *Surgeon to St. Joseph's Hospital, Good Samaritan Hospital, and Lexington Clinic, Lexington, Ky.*

TRAUMATIC SHOCK. By WALTER B. CANNON, M. D., *George Higginson Professor of Physiology, Harvard University.*

FRACTURES OF THE HUMERUS, RADIUS AND ULNA. By ELDRIDGE L. ELIASON, A.B., M.D., *Assistant Professor of Surgery at University of Pennsylvania Medical School.*

SURGERY OF THE SPLEEN. By EUGENE H. POOL, M.D., *Professor of Clinical Surgery, Columbia University, and RALPH G. STILLMAN, M.D., Pathologist, New York Hospital.*

TRAUMATIC INJURIES OF THE CARPUS. By KELLOGG SPEED, M.D., *Assistant Professor of Clinical Surgery, Rush Medical College of the University of Chicago.*

THE TRANSPLANTATION OF TISSUES. By HAROLD NEUHOF, M.D., *Attending Surgeon at Bellevue, Mt. Sinai and Montefiore Hospitals.*

GASTRO-ENTEROPTOSIS. By ROBERT C. COFFEY, M.D., *Clinical Professor in Surgery, University of Oregon.*

RECONSTRUCTIVE SURGERY OF THE UPPER EXTREMITY. By ARTHUR STEINDLER, M.D., *Professor of Orthopedic Surgery, Iowa State University Medical School.*

For early publication:

APPENDICITIS. By H. A. ROYSTER, *President of the Southern Surgical and Gynecological Association, Member of the American Medical Surgical Association.*

Others in preparation.

SURGICAL MONOGRAPHS, each by a distinguished authority. Fully illustrated. Cloth binding. Single volumes, \$7.00. Five or more, \$6.00 each.

Holt's Diseases of Infancy and Childhood



L. EMMET HOLT

WITHOUT fear of contradiction, the publishers assert that no work on diseases of children has ever been as satisfactory as Holt.

With the appearance of the first edition it was at once recognized as the leading text in pediatrics, a position which subsequent revisions have successfully maintained.

Holt, more than all other authors, has molded professional opinion as to methods of feeding and his views have been the accepted ones on the subject by the profession throughout the world.

Though the general practitioner or the pediatrician may have all other books on pediatrics in his library, he can no more class that library as complete without Holt than can a library of English literature be complete without the Bible.

The new ninth edition of "The Diseases of Infancy and Childhood" by Dr. Howland amounts to a rewriting of the entire text of the book.

The fact that the author's revisions were so extensive as to necessitate the re-setting of the book *in toto* gives an idea of the extent of the changes that have occurred in the field of pediatrics better than could an enumeration of the things changed.

Pediatrics is very largely a therapeutic specialty. The endeavor in this edition has been to emphasize methods of treatment even more positively than in preceding ones.

A Complete Revision, Containing Much Important New Material

From the appearance of the first edition, Dr. Holt's book has been notable as being highly scientific, but at the same time eminently practical—a combination of qualities too often lacking in medical literature. It is preeminently a book for the general practitioner. The author is firm in his belief but is not a hobby rider; authoritative, but not arrogant or dogmatic. Comparisons are said to be odious, but it is impossible to refrain from expressing the opinion that for the practising physician it is the most satisfactory work on pediatrics in the English language.—*The New York Medical Journal*.

DISEASES OF INFANCY AND CHILDHOOD. By L. EMMETT HOLT, M.D., SC.D., LL.D., late Professor of Diseases of Children in the College of Physicians and Surgeons, Columbia University; Attending Physician to the Babies' and Foundling Hospitals, New York, etc.; co-author with JOHN HOWLAND, A.M., M.D., Professor of Pediatrics in Johns Hopkins Medical School, and in the Johns Hopkins University, Baltimore; Ninth Edition, completely Revised and Enlarged. Printed from New Plates. 1147 pages. With 7 full page plates, some in colors, and 172 text illustrations. Cloth. \$8.50.



